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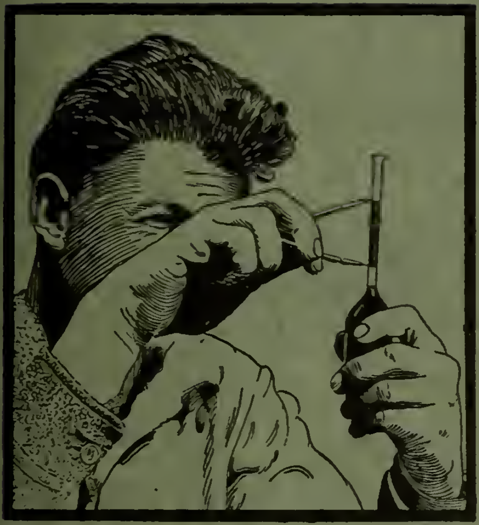
THE COW TESTER'S MANUAL



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MISCELLANEOUS
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No. 359

Supplement
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U. S. DEPARTMENT OF AGRICULTURE

Qualifications of Cow Tester

THE COW TESTER should be a practical dairyman. He should be enthusiastic about dairying.

He must be the type of man that wins the respect and confidence of those with whom he works.

He should be thoroughly trained for his work, because much of it requires special knowledge and skill. He must be well-grounded in the methods used in dairy herd-improvement associations for testing and record keeping, and he must keep well informed about the latest developments in association work.

The tester must determine, and keep complete records of, the production, feed consumption, and income for each cow in the herd, so that the owner may use the records as a guide in feeding and culling the herd for more efficient milk production.

He must keep complete, up-to-date identification records on all animals in the herd, so that the production records may be used in a progressive breeding program.

Since the tester's records and reports are used not only by the individual herd owner and association, but also by the Bureau of Dairy Industry and the State extension services as the basis of a Nation-wide program for proving all sires used in dairy herd-improvement associations and for locating the animals or families that transmit high production, it is most important that the various blank forms used by the tester are completely and properly filled out. He should thoroughly understand the exact nature of the data required for each item in these forms and how to record it properly.

UNITED STATES DEPARTMENT OF AGRICULTURE

MISCELLANEOUS PUBLICATION NO. 359 WASHINGTON, D. C., 1940

The Cow Tester's Manual[1]

◆

by J. F. KENDRICK, *chief*

DIVISION OF DAIRY HERD-IMPROVEMENT INVESTIGATIONS
BUREAU OF DAIRY INDUSTRY

◆

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[1] This publication supersedes Miscellaneous Circular 26, The Cow Tester's Handbook.

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Purpose of DHIA Work

A TYPICAL dairy herd-improvement association is an organization of about 26 dairy farmers who cooperatively employ a man, usually called the tester, to determine the quantity of milk and butterfat produced by each cow in each herd, the cost of the feed used in its production, and the income returned per cow; and also to keep a record of the information obtained.

The primary purpose of an association is to afford the members an economical method of obtaining information they can use in improving the efficiency of their herds. The records of production, feed cost, and income enable the herd owner to cull out the unprofitable cows, to feed the rest according to their production requirements, and to select individual animals in the herd that are the most suitable for breeding up the inherent producing ability of the herd.

Dairy herd-improvement associations are organized and operated as agricultural extension projects under the supervision of State extension dairymen and county agricultural agents, in cooperation with the Bureau of Dairy Industry.

Although each association is operated primarily for the benefit of the individual members, the information obtained from these associations is also being used in a Nation-wide extension program for improving the general efficiency of milk production throughout the whole country. In general, the objective of this larger program is to so improve the association herds that they may serve as a source of breeding stock for improving the whole dairy cattle population.

Because the use of good proved sires and sons of such sires is now recognized as the surest and quickest way to improve the inherent producing ability of dairy herds, the Bureau of Dairy Industry and the State extension services are cooperating in a Nation-wide program to prove all sires that are being used in association herds and to aid in disseminating and perpetuating the influence of the outstanding sires. To facilitate this program, the cooperating agencies have inaugurated a system for establishing and recording the identity of every association animal (male as well as female) and reporting the production records of all females for permanent recording by the Bureau of Dairy Industry.

Because of the accuracy required in collecting and reporting the identification and production records, well-trained testers are of vital importance to the successful operation of the whole dairy herd-improvement association program. The purpose of this manual is to provide the tester with complete instructions for obtaining the production and feed records required, for making the necessary calculations, and for preparing the various reports.

Outline of Tester's Work

IN THE typical dairy herd-improvement association the tester visits each farm once a month. In the so-called bimonthly testing associations he visits each farm only once in 2 months. As a rule he arrives at the farm early in the afternoon and remains until about the same time the following day.

In many of the best organized associations the tester receives his salary from the treasurer of the organization, who collects the money from the members. Besides receiving a regular salary from the association the tester receives free board and lodging in the farm homes. In most associations he provides his own transportation, but in some associations each farmer furnishes him with transportation to the next farm.

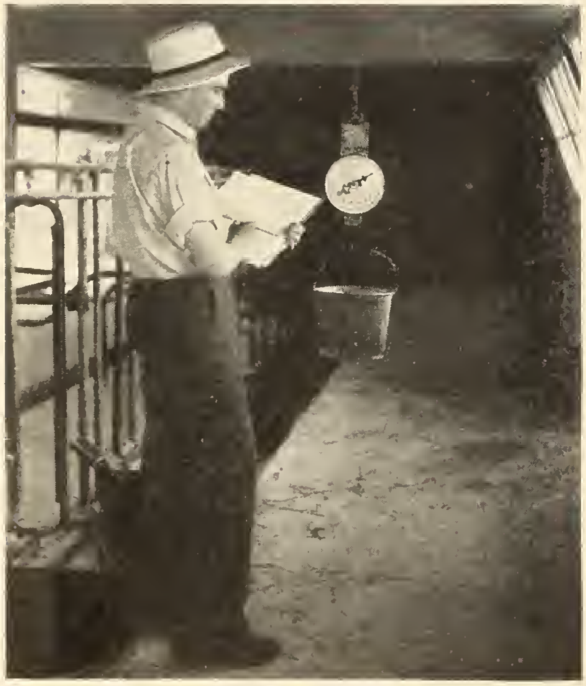


FIGURE 1.—*Weighing and recording the quantity of grain fed to each cow.*

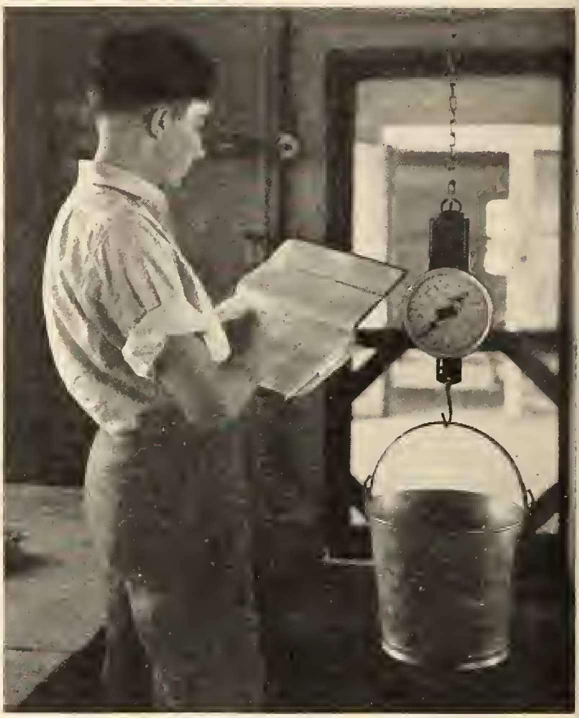


FIGURE 2.—*Weighing and recording the quantity of milk produced by each cow.*

The work of the tester is performed in accordance with the uniform rules adopted by the American Dairy Science Association for the operation of dairy herd-improvement associations (pp. 20–22).

The tester's work, during the 24-hour period on each farm, includes the following main activities:

(1) He affixes a special DHIA eartag to every nonregistered animal in the herd that has not already been tagged. He reports the identification numbers (registration or eartag, or both) of all animals that have not previously been recorded in the Bureau's permanent-record system.

(2) By actual weight (fig. 1) or measure he determines the quantity of grain fed night and morning to each cow; and by actual weight or

careful estimate he determines the quantity of dry and succulent roughage consumed during the 24-hour period. With the help of the farmer, he also estimates the value of the pasturage consumed by each cow.

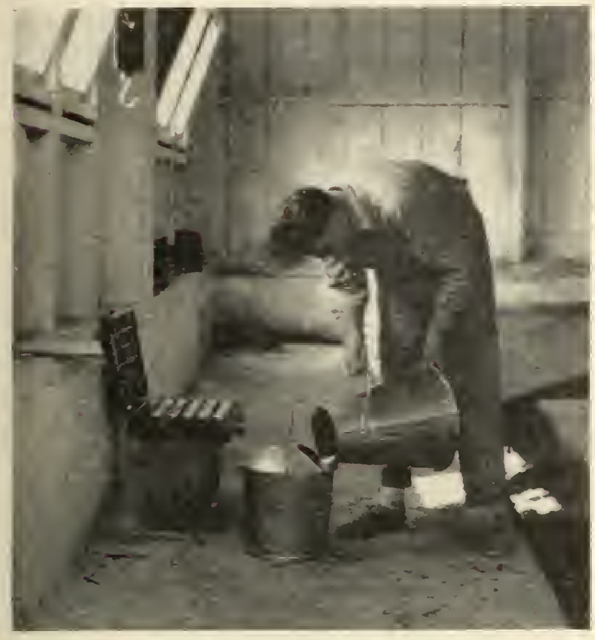


Figure 3.—*Mixing the milk of each milking before taking the sample.*

(3) He weighs and records the milk produced by each cow, night and morning (fig. 2), and tests a composite sample of the two milkings (figs. 3 and 4) by means of the Babcock test to determine the percentage of butterfat (fig. 5).

(4) On the basis of the testing day's results, he then calculates the total milk and butterfat produced and the feed consumed by each cow during the monthly testing period, and records all data in the herd-record book. (The monthly testing period varies for each herd, starting 15 days before the testing day and ending approximately 15 days after the testing day.)

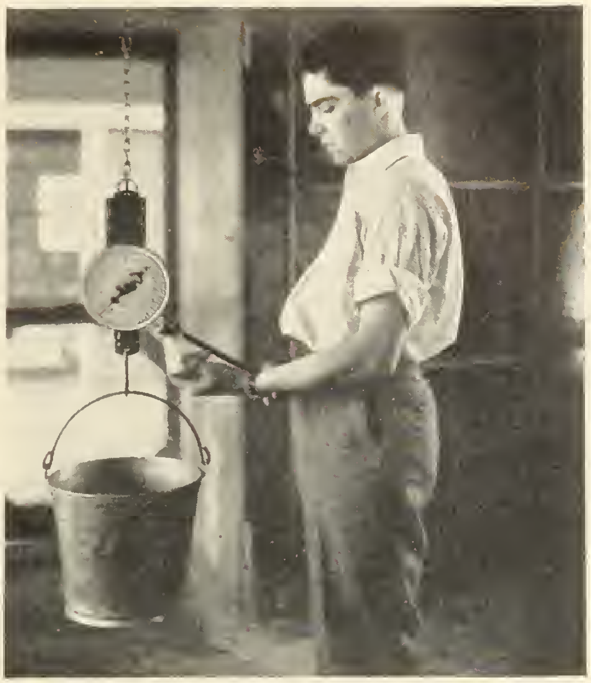


Figure 4.—*Taking a sample of the milk to be tested for butterfat content.*

(5) Finally, he fills out the various forms required in reporting the data to the State extension dairyman.

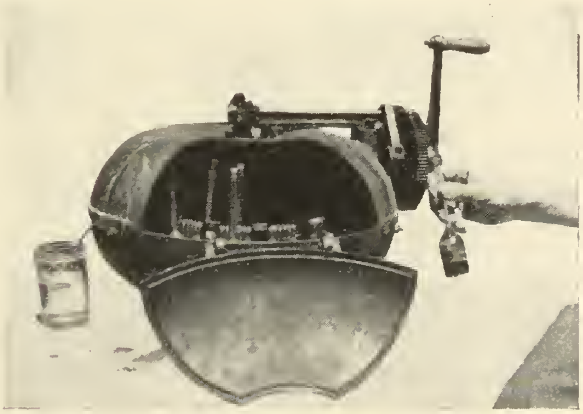


Figure 5.—*Testing the milk samples for butterfat content.*

List of Forms Used for Recording Data

The blank forms used in the dairy herd-improvement association work for recording and reporting the data collected by the tester are supplied to the State extension service by the United States Bureau of Dairy Industry, with the understanding that the States will send the data to the Bureau for study and analysis. Following is a list of the forms used:

BDI–2 (Barn-book fillers and binder).
BDI–63 (12-cow herd-record book).
BDI–5 (20-cow herd-record book).
BDI–6 (30-cow herd-record book).
BDI–7 (40-cow herd-record book).
BDI–8 (60-cow herd-record book).
BDI–1057 (Individual cow-record sheets), for owner's permanent herd-record book.
BDI–1058 (Herd-sire record), for owner's permanent herd-record book.
BDI–717 (Permanent DHIA identification-record report).
BDI–718 (Permanent DHIA production-record report).
BDI–4 (Monthly association summary sheet).
BDI–46 (Yearly individual-cow report blank), attached to herd-record book.
BDIM–780 (Yearly association herd summary).

Barn Book

AS THE name implies, the barn book is the one the tester uses at the barn. In this book he records the feed and production data for each cow and calculates the feed and production records for the testing period. These data are entered later in the herd-record book. One or more carbon copies of the barn-book sheets may be made if such copies are needed. Figure 6 shows a barn-book sheet properly filled out.

All cows in each herd, whether dry or in milk, must be entered on the barn-book sheets. The cows are listed in the same order each month, and both the name and the registration or eartag number of each cow are recorded.

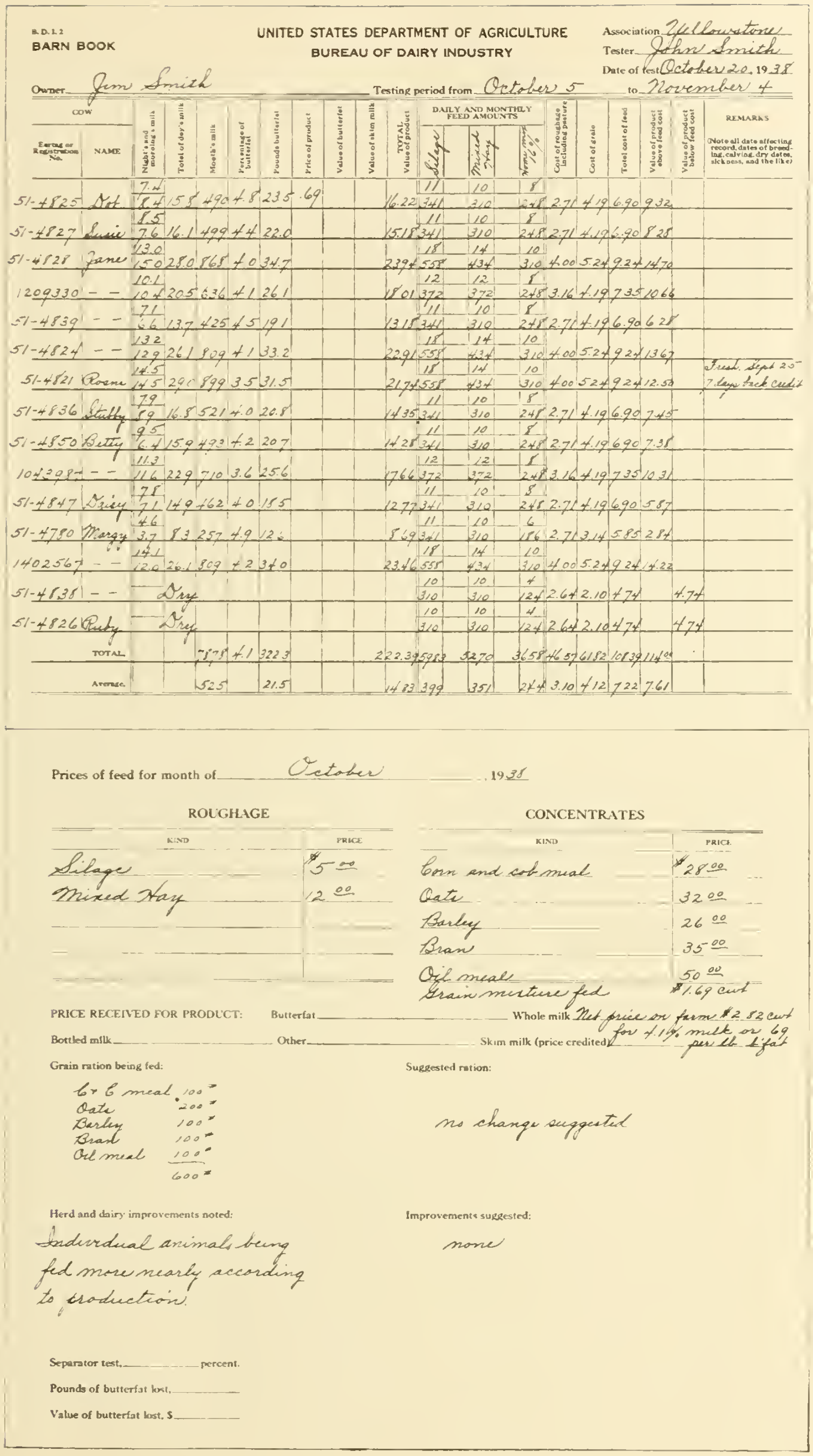
Milk weights.—In the third column a double space is provided for recording separately the weights of two milkings of each cow. The night's milk is recorded above the middle line of the section, and the morning's milk below. These weights are written in pounds and tenths of pounds.

In the column headed "Total of day's milk" the tester writes the sum of the weights of the two milkings as computed from the preceding column. He then multiplies the total of the day's milk by the number of days in the monthly testing period (see establishing the Monthly Testing Period, p. 23), and enters the figure in the column headed "Month's milk."

If for any reason all or any part of a cow's milk is lost before the tester obtains its weight, he shall use the average of the figures obtained on the preceding testing day and on the following testing day to calculate the production for the period. To complete the calculation temporarily before leaving the farm, he may use the production of the preceding testing day after deducting 10 percent to compensate for the advance in the stage of lactation. No deduction need be made from the figures for the first month of the lactation period, however, as the production of the second month is usually about the same as that of the first month. These estimated figures are placed in the herd-record book in pencil, and the corrected figures are entered in ink the following month, after the tester has checked with the actual production.

If a cow is almost dry at the time of the tester's visit, the farmer and the tester may estimate the date when she will actually go dry and figure her production record for the period accordingly.

Computing the butterfat.—After finding the percentage of butterfat by means of the Babcock test, the tester writes the result in the column



B. D. I. 2
BARN BOOK

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF DAIRY INDUSTRY

Association Yellowstone
Tester John Smith
Date of test October 20, 1938

Owner Jim Smith
Testing period from October 5 to November 4

COW											DAILY AND MONTHLY FEED AMOUNTS										
Earing or Registration No.	NAME	Night's and morning's milk	Total of day's milk	Month's milk	Percentage of butterfat	Pounds butterfat	Price of product	Value of butterfat	Value of skim milk	TOTAL Value of product	Silage		Mixed Hay		Home mix 16%	Cost of roughage including pasture	Cost of grain	Total cost of feed	Value of product above feed cost	Value of product below feed cost	REMARKS (Note all data affecting record, dates of breeding, calving, dry dates, sickness, and the like)
51-4825	Dot	7.4 8.4	15.8	490	4.8	23.5	.69			16.22	11 341		10 310		8 248	2.71	4.19	6.90	9.32		
51-4827	Susie	8.5 7.6	16.1	499	4.4	22.0				15.18	11 341		10 310		8 248	2.71	4.19	6.90	8.28		
51-4828	Jane	13.0 15.0	28.0	868	4.0	34.7				23.94	18 558		14 434		10 310	4.00	5.24	9.24	14.70		
1209330	— —	10.1 10.4	20.5	636	4.1	26.1				18.01	12 372		12 372		8 248	3.16	4.19	7.35	10.66		
51-4839	— —	7.1 6.6	13.7	425	4.5	19.1				13.18	11 341		10 310		8 248	2.71	4.19	6.90	6.28		
51-4824	— —	13.2 12.9	26.1	809	4.1	33.2				22.91	18 558		14 434		10 310	4.00	5.24	9.24	13.67		
51-4821	Roane	14.5 14.5	29.0	899	3.5	31.5				21.74	18 558		14 434		10 310	4.00	5.24	9.24	12.50		Fresh. Sept 25 7 days back credit
51-4836	Stubby	7.9 8.9	16.8	521	4.0	20.8				14.35	11 341		10 310		8 248	2.71	4.19	6.90	7.45		
51-4850	Betty	9.5 6.4	15.9	493	4.2	20.7				14.28	11 341		10 310		8 248	2.71	4.19	6.90	7.38		
1043987	— —	11.3 11.6	22.9	710	3.6	25.6				17.66	12 372		12 372		8 248	3.16	4.19	7.35	10.31		
51-4847	Daisy	7.8 7.1	14.9	462	4.0	18.5				12.77	11 341		10 310		8 248	2.71	4.19	6.90	5.87		
51-4780	Margy	4.6 3.7	8.3	257	4.9	12.6				8.69	11 341		10 310		6 186	2.71	3.14	5.85	2.84		
1402567	— —	14.1 12.0	26.1	809	4.2	34.0				23.46	18 558		14 434		10 310	4.00	5.24	9.24	14.22		
51-4838	— —		Dry								10 310		10 310		4 124	2.64	2.10	4.74		4.74	
51-4826	Ruby		Dry								10 310		10 310		4 124	2.64	2.10	4.74		4.74	
	TOTAL			7878	4.1	322.3				222.39	5983		5270		3658	46.57	61.82	108.39	114.00		
	Average			525		21.5				14.83	399		351		244	3.10	4.12	7.22	7.61		

Prices of feed for month of October, 1938

ROUGHAGE

KIND	PRICE
Silage	$5.00
Mixed Hay	12.00

CONCENTRATES

KIND	PRICE
Corn and cob meal	$28.00
Oats	32.00
Barley	26.00
Bran	35.00
Oil meal	50.00
Grain mixture fed	$1.69 cwt

PRICE RECEIVED FOR PRODUCT: Butterfat ______ Whole milk Net price on farm $2.82 cwt for 4.1% milk or 69 per lb. b'fat

Bottled milk ______ Other ______ Skim milk (price credited) ______

Grain ration being fed:

C & C meal	100#
Oats	200#
Barley	100#
Bran	100#
Oil meal	100#
	600#

Suggested ration:

no change suggested

Herd and dairy improvements noted:

Individual animals being fed more nearly according to production.

Improvements suggested:

none

Separator test, ______ percent.

Pounds of butterfat lost, ______

Value of butterfat lost, $ ______

FIGURE 6.—*Barn-book sheet, properly filled out.*

marked "Percentage of butterfat." Then, in the column marked "Pounds butterfat" he writes the result obtained by multiplying the total milk for the period by the butterfat test.

Price of product.—In the column headed "Price of product" the tester writes the price the farmer received for the milk or butterfat, as calculated on a butterfat basis. The average price the farmer received during the monthly period is used. If this price cannot be determined accurately with the farmer's help, it should be estimated as accurately as possible.

When milk is sold for so much a gallon, the tester converts the gallons into pounds and computes the price at so much per 100 pounds. A gallon of milk weighs approximately 8.6 pounds.

Value of butterfat.—If the milk is separated on the farm and only the butterfat is marketed, the tester writes its value in the column headed "Value of butterfat." This figure is obtained by multiplying the pounds of butterfat produced during the testing period by the price per pound received at the farm.

Value of skim milk.—When the milk is separated and only the butterfat is marketed, the tester calculates the value of the skim milk that should be credited to each cow and writes the figure in the column headed "Value of skim milk."

When milk is separated, 85 percent is skim milk. To simplify the calculation of the credit for skim milk, the tester may multiply the pounds of whole milk produced by each cow by 85 percent of the price of skim milk—for example, if the price of skim milk is 25 cents per 100 pounds, he would multiply by 85 percent of 25, or 21.25.

Total value of product.—If butterfat is marketed the tester adds the figures for value of butterfat and value of skim milk and writes the sum in the column headed "Total value of the product." If whole milk is marketed, the tester writes the value of the whole milk in the "Total value of product" column.

When whole milk is sold according to its butterfat content or at different base and surplus prices, the determination of the value of the product of individual cows is often difficult. Many States have found it practicable to use the average price received for whole milk to calculate the price received per pound for butterfat, and then use the price per pound of butterfat to determine the value of the product of each cow. For example, as in figure 6, the average price received on the farm for whole milk with an average test of 4.1 percent of fat, was $2.82 per 100 pounds. The average price in cents per pound of butterfat would be 2.82 divided by 4.1, or 69 cents. The value of the product of each cow may be calculated by multiplying the number of pounds of butterfat she produces by 69.

Quantity of feed.—Under the heading "Daily and monthly feed amounts" the tester writes the quantity of each kind of feed given each cow daily, and below the line he writes the quantity fed each cow during the testing period. Feed records for the testing period are calculated and recorded for dry cows as well as for cows in milk. All feeds are recorded in pounds. Definite names of the succulent and dry roughages, individual grains, and supplements fed are recorded. If a concentrate mixture is fed, commercial or home mix, the percentage of its total protein content is reported.

Cost of feed, roughage, etc.—The cost assigned to home-grown feeds of the same quality should be uniform throughout the association. In some associations the prices used as the basis for figuring feed costs are fixed by a committee, which meets when necessary and estimates the value of home-grown feeds for a definite period. These estimates include the pasture.

If there is no such committee, the tester and the farmer may determine feed prices. All home-grown feeds, including silage, hay, and grain, should be figured according to their current market value on the farm, including cost of storage in the silo, mow, or bin. The price of ground feeds (home-grown) should include the cost of grinding. The price of pasture should be based on a consideration of current charges for grazing, rental values, kind, and carrying capacity of the pasture.

The value of purchased hay and concentrates is figured on the basis of the price paid for delivery at the farm.

In the column headed "Cost of roughage, including pasture" the tester writes the cost of pasture and other roughages for the monthly testing period. In like manner, under each of the next four headings, "Cost of grain," "Total cost of feed," "Value of product above feed cost," and "Value of product below feed cost," the tester writes the figures for the monthly testing period. On the back of the barn-book sheet, the tester keeps feed and improvement records as indicated.

Under "Remarks" the tester writes all items that affect the record abnormally.

After all computations have been made and each individual-cow record in the barn book is complete for the month, the totals for the herd are obtained by adding the individual-cow records.

The average for the herd is calculated by dividing the herd total by the number of cows in the herd on the testing day, including dry cows. First-calf heifers freshening 6 days or less before the testing day, and consequently not tested, are not included in this average.

In figuring monthly herd averages, be careful in computing the production of cows that freshen more than half a month before and of cows that are estimated to go dry more than half a month after the testing day. Credit those fractions of a month that would make the testing period for the cow longer than a month, to the month preceding or the one following the testing period under consideration, as explained under crediting production to the proper month (p. 27).

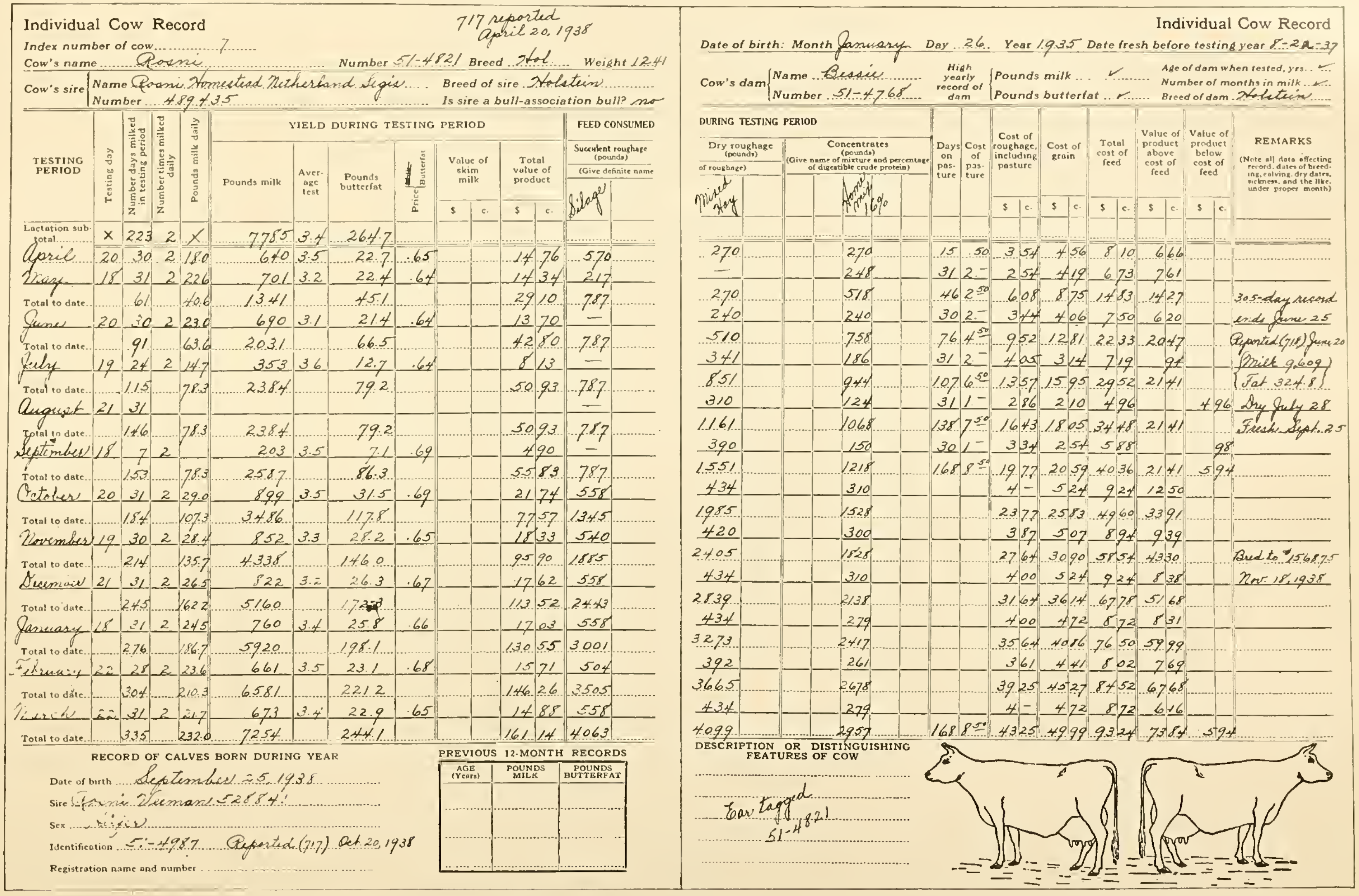
Herd-Record Book

THE herd-record book is designed to include individual monthly records of each cow in the herd for a yearly testing period. These books are bound in various sizes, suitable for use in 12-, 20-, 30-, 40-, and 60-cow herds. At the beginning of the book, a form is provided for the monthly herd summary and, at the end, one for the yearly herd summary.

The monthly record of each cow, which has been fully computed and entered in the barn book, is transferred item by item to the herd-record book, one double page of this book being used for each cow. Figure 7 shows an individual-cow record of a herd-record book properly filled in, for the 12 monthly testing periods of the testing year.

The total figures from the barn book are transferred to the Monthly Herd Summary form in the front of the herd-record book (fig. 8).

Back credit (as explained on p. 27) must be credited to the proper monthly testing period. To be certain of this the monthly totals and averages should be entered first in pencil, then on the next visit, when the back credits are known, they may be included in the totals and the data entered in ink.



Individual Cow Record

717 reported
April 20, 1938

Index number of cow 7

Cow's name Rosni Number 51-4821 Breed Hol Weight 1241

Cow's sire Name Rosni Homestead Netherland Segis Breed of sire Holstein

Number 489435 Is sire a bull-association bull? no

Date of birth: Month January Day 26 Year 1935 Date fresh before testing year 8-22-37

Cow's dam Name Bessie Number 51-4768

High yearly record of dam Pounds milk ✓ Pounds butterfat ✓

Age of dam when tested, yrs. ✓

Number of months in milk ✓

Breed of dam Holstein

Testing period	Testing day	Number days milked in testing period	Number times milked daily	Pounds milk daily	Yield during testing period: Pounds milk	Average test	Pounds butterfat	Price butterfat	Value of skim milk $	c.	Total value of product $	c.	Feed consumed: Succulent roughage (pounds) Silage	Dry roughage (pounds) Mixed Hay	Concentrates (pounds) Home mix 16%	Days on pasture	Cost of pasture	Cost of roughage, including pasture $	c.	Cost of grain $	c.	Total cost of feed $	c.	Value of product above cost of feed $	c.	Value of product below cost of feed $	c.	Remarks (Note all data affecting record, dates of breeding, calving, dry dates, sickness, and the like, under proper month)
Lactation subtotal	×	223	2	×	7785	3.4	264.7																					
April	20	30	2	18.0	640	3.5	22.7	.65			14	76	570	270	270	15	.50	3	54	4	56	8	10	6	66			
May	18	31	2	22.6	701	3.2	22.4	.64			14	34	217	—	248	31	2.—	2	54	4	19	6	73	7	61			
Total to date		61		40.6	1341		45.1				29	10	787	270	518	46	2.50	6	08	8	75	14	83	14	27			305-day record
June	20	30	2	23.0	690	3.1	21.4	.64			13	70	—	240	240	30	2.—	3	44	4	06	7	50	6	20			ends June 25
Total to date		91		63.6	2031		66.5				42	80	787	510	758	76	4.50	9	52	12	81	22	33	20	47			Reported (718) June 20
July	19	24	2	14.7	353	3.6	12.7	.64			8	13	—	341	186	31	2.—	4	05	3	14	7	19		94			(Milk 9,609
Total to date		115		78.3	2384		79.2				50	93	787	851	944	107	6.50	13	57	15	95	29	52	21	41			Fat 324.8)
August	21	31											—	310	124	31	1.—	2	86	2	10	4	96			4	96	Dry July 28
Total to date		146		78.3	2384		79.2				50	93	787	1161	1068	138	7.50	16	43	18	05	34	48	21	41			Fresh Sept. 25
September	18	7	2		203	3.5	7.1	.69			4	90	—	390	150	30	1.—	3	34	2	54	5	88				98	
Total to date		153		78.3	2587		86.3				55	83	787	1551	1218	168	8.50	19	77	20	59	40	36	21	41	5	94	
October	20	31	2	29.0	899	3.5	31.5	.69			21	74	558	434	310			4	—	5	24	9	24	12	50			
Total to date		184		107.3	3486		117.8				77	57	1345	1985	1528			23	77	25	83	49	60	33	91			
November	19	30	2	28.4	852	3.3	28.2	.65			18	33	540	420	300			3	87	5	07	8	94	9	39			
Total to date		214		135.7	4338		146.0				95	90	1885	2405	1828			27	64	30	90	58	54	43	30			Bred to #156875
December	21	31	2	26.5	822	3.2	26.3	.67			17	62	558	434	310			4	00	5	24	9	24	8	38			Nov. 18, 1938
Total to date		245		162.2	5160		172.3				113	52	2443	2839	2138			31	64	36	14	67	78	51	68			
January	18	31	2	24.5	760	3.4	25.8	.66			17	03	558	434	279			4	00	4	72	8	72	8	31			
Total to date		276		186.7	5920		198.1				130	55	3001	3273	2417			35	64	40	86	76	50	59	99			
February	22	28	2	23.6	661	3.5	23.1	.68			15	71	504	392	261			3	61	4	41	8	02	7	69			
Total to date		304		210.3	6581		221.2				146	26	3505	3665	2678			39	25	45	27	84	52	67	68			
March	22	31	2	21.7	673	3.4	22.9	.65			14	88	558	434	279			4	—	4	72	8	72	6	16			
Total to date		335		232.0	7254		244.1				161	14	4063	4099	2957	168	8.50	43	25	49	99	93	24	73	84	5	94	

RECORD OF CALVES BORN DURING YEAR

Date of birth September 25, 1938

Sire Rosni Veeman 52884

Sex Heifer

Identification 51-4987 Reported (717) Oct. 20, 1938

Registration name and number

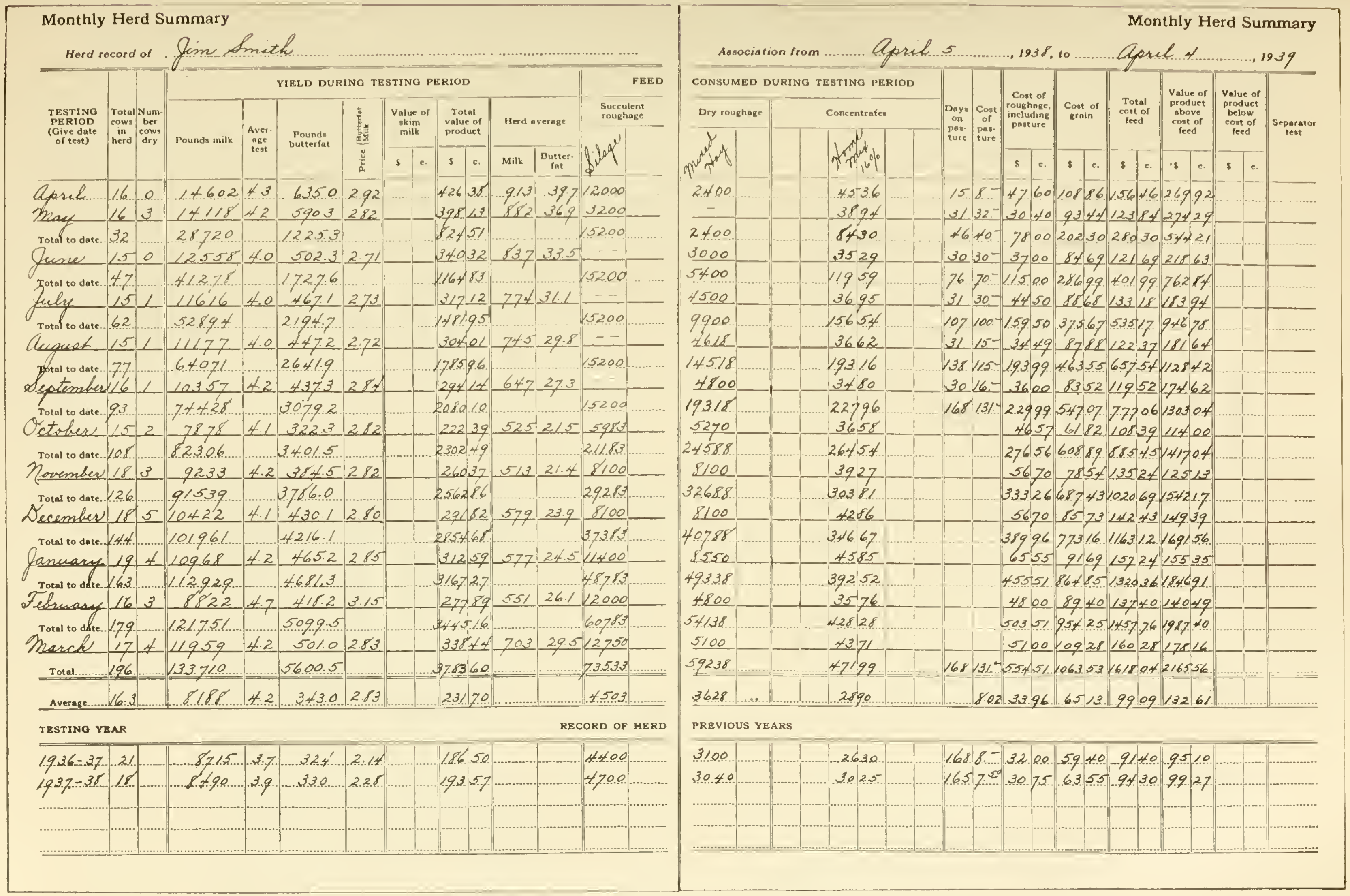
PREVIOUS 12-MONTH RECORDS

AGE (Years)	POUNDS MILK	POUNDS BUTTERFAT

DESCRIPTION OR DISTINGUISHING FEATURES OF COW

Ear tagged
51-4821

FIGURE 7.—*Individual-cow record in the herd-record book, properly kept. On each testing day, the record for the monthly testing period and the total to date are filled in.*



Monthly Herd Summary

Herd record of Jim Smith

TESTING PERIOD (Give date of test)	Total cows in herd	Number cows dry	YIELD DURING TESTING PERIOD: Pounds milk	Average test	Pounds butterfat	Price (Butterfat / Milk)	Value of skim milk $	c.	Total value of product $	c.	Herd average: Milk	Butterfat	FEED: Succulent roughage: Silage	
April	16	0	14602	4.3	635.0	2.92			426	38	913	39.7	12000	
May	16	3	14118	4.2	590.3	2.82			398	13	882	36.9	3200	
Total to date	32		28720		1225.3				824	51			15200	
June	15	0	12558	4.0	502.3	2.71			340	32	837	33.5	--	
Total to date	47		41278		1727.6				1164	83			15200	
July	15	1	11616	4.0	467.1	2.73			317	12	774	31.1	--	
Total to date	62		52894		2194.7				1481	95			15200	
August	15	1	11177	4.0	447.2	2.72			304	01	745	29.8	--	
Total to date	77		64071		2641.9				1785	96			15200	
September	16	1	10357	4.2	437.3	2.84			294	14	647	27.3	--	
Total to date	93		74428		3079.2				2080	10			15200	
October	15	2	7878	4.1	322.3	2.82			222	39	525	21.5	5983	
Total to date	108		82306		3401.5				2302	49			21183	
November	18	3	9233	4.2	384.5	2.82			260	37	513	21.4	8100	
Total to date	126		91539		3786.0				2562	86			29283	
December	18	5	10422	4.1	430.1	2.80			291	82	579	23.9	8100	
Total to date	144		101961		4216.1				2854	68			37383	
January	19	4	10968	4.2	465.2	2.85			312	59	577	24.5	11400	
Total to date	163		112929		4681.3				3167	27			48783	
February	16	3	8822	4.7	418.2	3.15			277	89	551	26.1	12000	
Total to date	179		121751		5099.5				3445	16			60783	
March	17	4	11959	4.2	501.0	2.83			338	44	703	29.5	12750	
Total	196		133710		5600.5				3783	60			73533	
Average	16.3		8188	4.2	343.0	2.83			231	70			4503	
TESTING YEAR													RECORD OF HERD	
1936-37	21		8715	3.7	324	2.14			186	50			4400	
1937-38	18		8490	3.9	330	2.28			193	57			4700	

Monthly Herd Summary

Association from April 5, 1938, to April 4, 1939

TESTING PERIOD	CONSUMED DURING TESTING PERIOD: Dry roughage: Mixed Hay		Concentrates: Home Mix 16%			Days on pasture	Cost of pasture	Cost of roughage, including pasture $	c.	Cost of grain $	c.	Total cost of feed $	c.	Value of product above cost of feed $	c.	Value of product below cost of feed $	c.	Separator test
April	2400		4536			15	8.–	47	60	108	86	156	46	269	92			
May	–		3894			31	32.–	30	40	93	44	123	84	274	29			
Total to date	2400		8430			46	40.–	78	00	202	30	280	30	544	21			
June	3000		3529			30	30.–	37	00	84	69	121	69	218	63			
Total to date	5400		11959			76	70.–	115	00	286	99	401	99	762	84			
July	4500		3695			31	30.–	44	50	88	68	133	18	183	94			
Total to date	9900		15654			107	100.–	159	50	375	67	535	17	946	78			
August	4618		3662			31	15.–	34	49	87	88	122	37	181	64			
Total to date	14518		19316			138	115.–	193	99	463	55	657	54	1128	42			
September	4800		3480			30	16.–	36	00	83	52	119	52	174	62			
Total to date	19318		22796			168	131.–	229	99	547	07	777	06	1303	04			
October	5270		3658					46	57	61	82	108	39	114	00			
Total to date	24588		26454					276	56	608	89	885	45	1417	04			
November	8100		3927					56	70	78	54	135	24	125	13			
Total to date	32688		30381					333	26	687	43	1020	69	1542	17			
December	8100		4286					56	70	85	73	142	43	149	39			
Total to date	40788		34667					389	96	773	16	1163	12	1691	56			
January	8550		4585					65	55	91	69	157	24	155	35			
Total to date	49338		39252					455	51	864	85	1320	36	1846	91			
February	4800		3576					48	00	89	40	137	40	140	49			
Total to date	54138		42828					503	51	954	25	1457	76	1987	40			
March	5100		4371					51	00	109	28	160	28	178	16			
Total	59238		47199			168	131.–	554	51	1063	53	1618	04	2165	56			
Average	3628		2890				8.02	33	96	65	13	99	09	132	61			
PREVIOUS YEARS																		
1936-37	3100		2630			168	8.–	32	00	59	40	91	40	95	10			
1937-38	3040		3025			165	7.50	30	75	63	55	94	30	99	27			

FIGURE 8.—*Monthly Herd Summary form, completely filled out.*

The Tester's Round

First Visit

On the tester's first visit to the farm he should proceed as follows: Obtain all needed information about each cow and copy it into the herd-record book. At the top of the page in the herd-record book, write the name and number of the cow, her breed, age, weight, or the estimated weight, date fresh before testing year began, the name and registration number of the cow's sire, the name and number of the cow's dam. Record also the production record of the dam, unless a permanent herd-record book as discussed later is kept. Under "Breed" clearly state whether the animal is grade or registered. The term "registered" should be used instead of the term "purebred" because it is more definite. All nonregistered animals, whether purebred or grade, should be recorded as grade animals.

If a cow is in milk at the beginning of the testing year, go to the previous herd-record book and get her record from the time she freshened to the beginning of the present testing year, and enter it on the line "Lactation subtotal" (fig. 7). With this information at the top of the record, when the cow goes dry the data for the entire lactation will be on one page.

Also note on each individual cow record page the date that the cow will end the first 305 days of her lactation period. (See table 4, p. 33.) This will be helpful in reporting all 305-day lacation records promptly on the permanent production-record report (form BDI–718), as shown in figure 13 and described on page 34.

Program on Each Farm

Evening work:

(1) Plan to arrive at the farm so as not to cause any delay in the evening milking.

(2) List all cows in the herd by name and number on a barn-book sheet (BDI–2) before milking time. List all cows in the same order each month. This makes it easy to keep track of cows taken from or added to the herd.

(3) Weigh or measure the grain and weigh or estimate the roughage fed to each cow.

(4) Weigh the milk of each cow in the herd.

(5) Record the weight of the milk on the barn sheet.

(6) Mix the milk from each cow thoroughly by pouring it from one pail to another as shown in figure 3; then take the sample, as illustrated in figure 4.

(7) Number the sample jars to correspond with the numbers of the cows on the barn sheets. Keep the sample jars tightly closed in a locked box until ready to determine the butterfat percentage.

(8) Record the grain mixture being fed to each cow.

(9) List the dry cows and record the dates they were turned dry.

(10) Get the approximate dates when other cows will be turned dry during the month.

(11) Get freshening dates of cows that have freshened since last test.

(12) Make note of cows that may freshen before next test.

(13) Record all information asked for at the top of the page in the herd-record book.

(14) Find out the prices of feeds used, and the prices received for milk and butterfat.

(15) Discuss herd problems with the owner.

Morning work:

(1) Weigh or measure the grain fed each cow, and weigh or estimate the roughage, as was done in the evening.

(2) Weigh and sample the milk from each cow as was done in the evening. The percentage of fat is to be determined by testing a composite sample of the evening's and morning's milk of each cow. Greater accuracy is obtained by using proportionate quantities from each milking in making up the composite sample.

(3) Test milk for butterfat content (fig. 5). (See uniform rules, p. 20.)

(4) Fill out the barn sheet. Figure the amounts of each kind of grain fed during the month, and the roughage, grain, and total feed costs. Do not leave the farm without getting this information.

(5) Copy the required data from the barn-book sheet into the herd-record book.

(6) Make feed recommendations; write them on the back of the barn sheet.

(7) Be sure that all information is complete in the herd-record book before leaving the farm. Keep all records up to date (fig. 9).

(8) Eartag all unidentified calves and purchased replacements that have entered the herd since the last visit.

(9) Record the identification data in the owner's permanent herd-record book (forms BDI–1057 and BDI–1058).

(10) Post the production record of each cow in lactation 305 days, and that of each cow completing her lactation period in the owner's permanent herd-record book on form BDI–1057 (fig. 10). Record therein all other current information concerning each cow, and each herd sire (fig. 11).

(11) Go over the records with the farmer.

(12) Report the identification records on form BDI–717 (fig. 12). Write in the herd-record book the date that the identification record of each animal is reported. This prevents duplication of records and insures that all records will be reported.

(13) Report the production record on form BDI–718 (fig. 13) for each cow that has completed the first 305 days of her lactation period (pp. 32–34). Write in the herd-record book the date that the record is reported.

On subsequent visits to the farm, calculate the month's record for each cow from the data for the testing day, and write it in the barn book as illustrated in the example (fig. 6). Copy it into the herd-record book; then add the records of all the previous months to the current record to get the total to date, which is placed on the third line (a dotted line) of the individual-cow record page in the herd-record book, as in the example (fig. 7). Each subsequent total to date will be on a dotted line. It is a good practice to write these totals, as some testers do, in red ink. Fill in the individual-cow record, month by month, and write the totals to date each month until the end of the year, when there is a complete yearly record of each cow in each herd of the association.

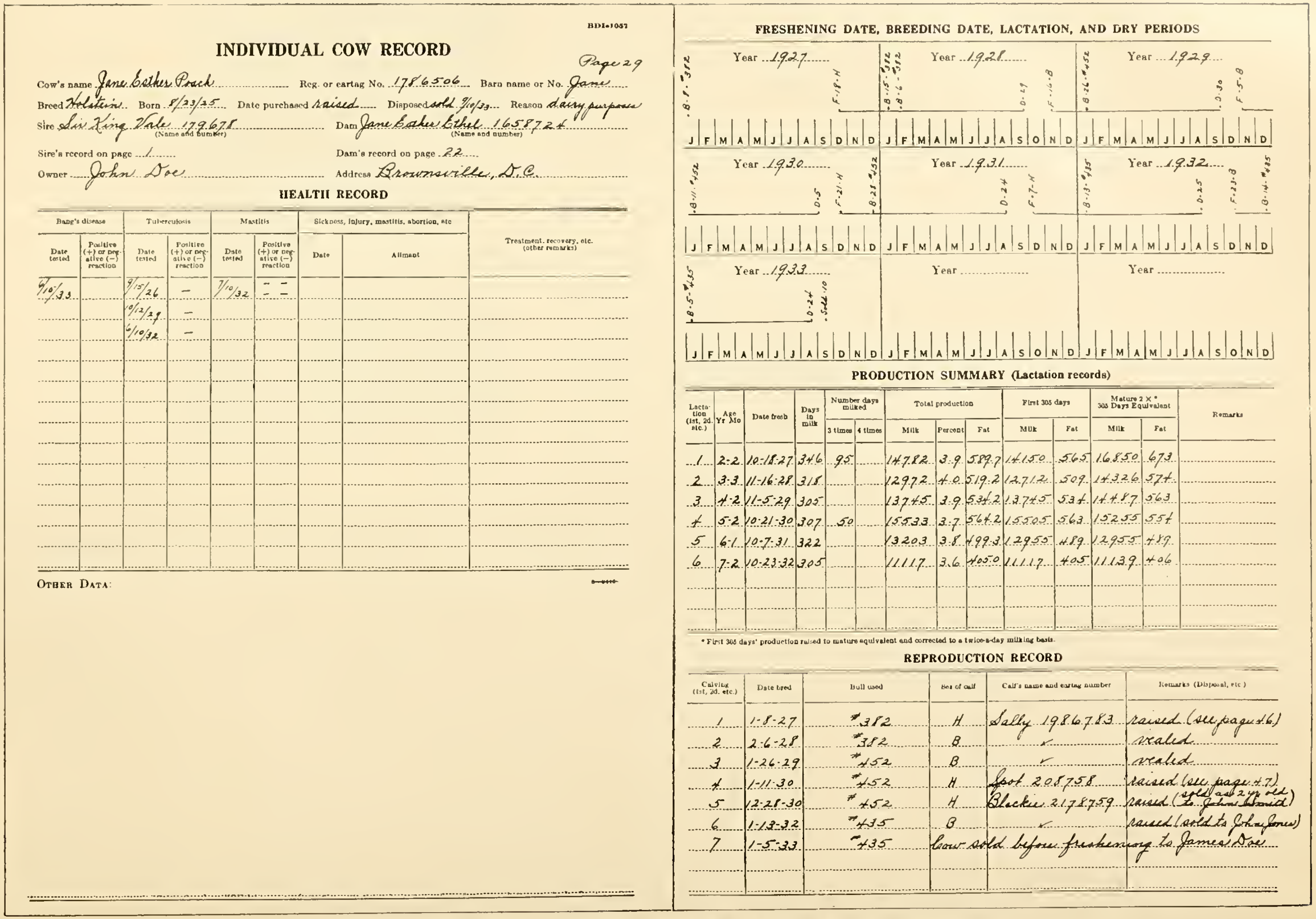
Owner's Permanent Herd-Record Book

The tester prepares for each herd owner a permanent herd-record book containing the identification and breeding performance of all the animals in his herd. This book consists of an individual record for each cow filled in on form BDI–1057 (fig. 10) and a herd-sire record for each bull used in the herd, filled in on form BDI–1058 (fig. 11).

These forms are punched for use in a standard three-ring notebook cover. The cover, which can usually be obtained at any store handling school supplies, is furnished by the association member. The tester also places in each member's permanent herd-record book a sample copy properly filled in, for each form used (which he obtains from his State extension dairyman), to show what data the tester must have from the farmer to compile this book.

The purpose of this book is to provide the farmer with a permanent record of the identification data on each animal in the herd and to accumulate on one sheet the complete production and reproduction data for the entire lifetime of the animal. Thus, a member can find a complete production and family history of each animal in his herd in this one book, instead of having to look for it in several yearly herd-record books. This permanent herd-record book must be kept up to date at all times. The tester records all current information on each visit (fig. 9), and discusses the data with the farmer.

FIGURE 9.—*The tester completes all records before leaving the farm.*



BDI-1057

INDIVIDUAL COW RECORD

Page 29

Cow's name Jane Esther Posch Reg. or eartag No. 1786506 Barn name or No. Jane
Breed Holstein Born 8/23/25 Date purchased raised Disposed sold 9/10/33 Reason dairy purpose
Sire Sir King Vale 179678 (Name and number) Dam Jane Esther Ethel 1658724 (Name and number)
Sire's record on page 1 Dam's record on page 22
Owner John Doe Address Brownsville, D.C.

HEALTH RECORD

Bang's disease		Tuberculosis		Mastitis		Sickness, injury, mastitis, abortion, etc		Treatment, recovery, etc. (other remarks)
Date tested	Positive (+) or negative (−) reaction	Date tested	Positive (+) or negative (−) reaction	Date tested	Positive (+) or negative (−) reaction	Date	Ailment	
9/10/33		9/15/26	–	7/10/32	– – – –			
		10/12/29	–					
		6/10/32	–					

Other Data:

FRESHENING DATE, BREEDING DATE, LACTATION, AND DRY PERIODS

Year 1927: B-8-#382 · F-18-H
Year 1928: B-15-#382 · B-6-#382 · D-29 · F-16-B
Year 1929: B-26-#452 · D-30 · F-5-B
Year 1930: B-11-#452 · D-5 · F-21-H · B-28-#452
Year 1931: D-24 · F-7-H
Year 1932: B-13-#435 · D-25 · F-23-B · B-14-#435
Year 1933: B-5-#435 · D-24 · Sold 10
Year
Year

PRODUCTION SUMMARY (Lactation records)

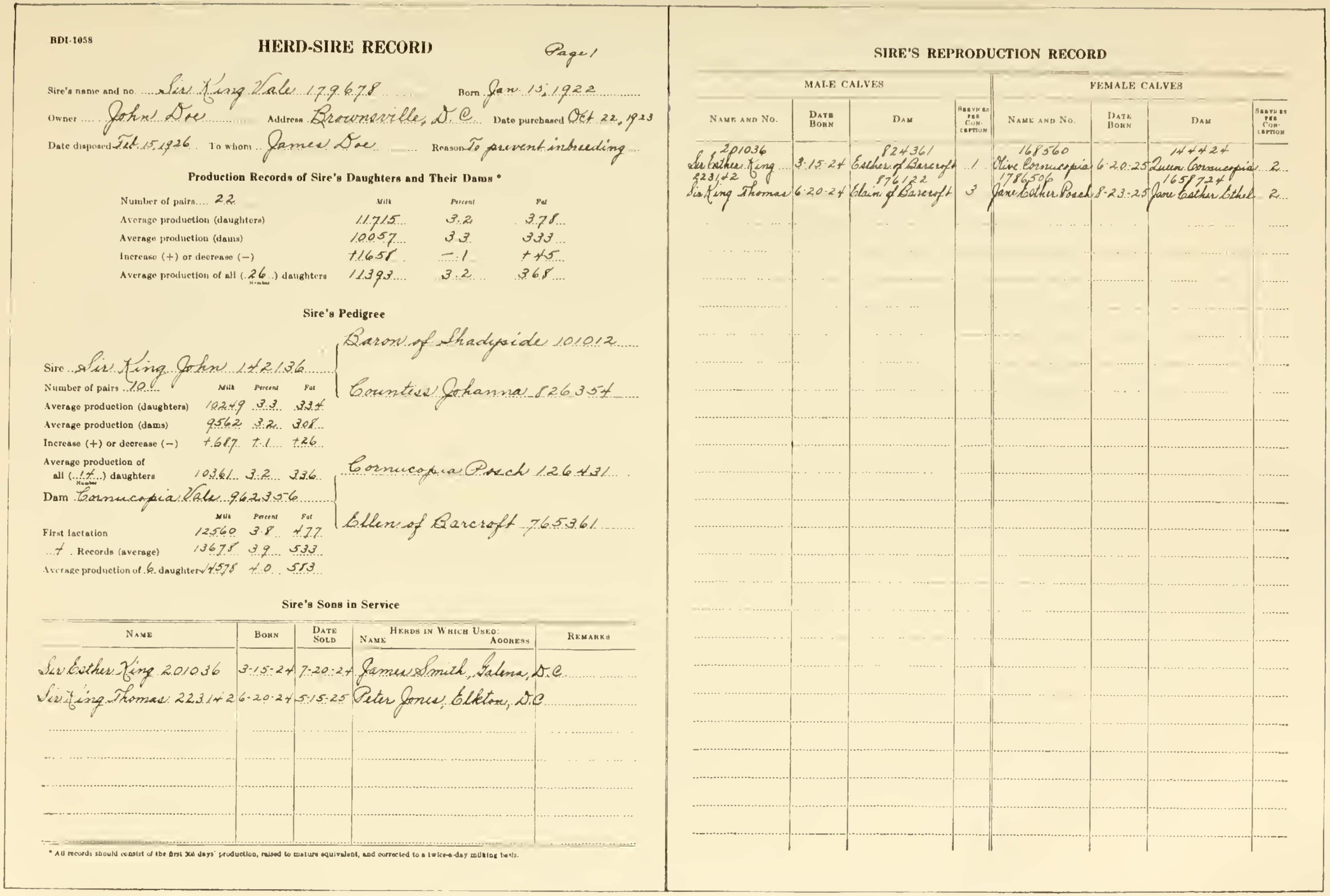
Lactation (1st, 2d, etc.)	Age Yr Mo	Date fresh	Days in milk	Number days milked		Total production			First 305 days		Mature 2 X * 305 Days Equivalent		Remarks
				3 times	4 times	Milk	Percent	Fat	Milk	Fat	Milk	Fat	
1	2-2	10-18-27	346	95		14782	3.9	589.7	14150	565	16850	673	
2	3-3	11-16-28	318			12972	4.0	519.2	12712	509	14326	574	
3	4-2	11-5-29	305			13745	3.9	534.2	13745	534	14487	563	
4	5-2	10-21-30	307	50		15533	3.7	564.2	15505	563	15255	554	
5	6-1	10-7-31	322			13203	3.8	499.3	12955	489	12955	489	
6	7-2	10-23-32	305			11117	3.6	405.0	11117	405	11139	406	

* First 305 days' production raised to mature equivalent and corrected to a twice-a-day milking basis.

REPRODUCTION RECORD

Calving (1st, 2d, etc.)	Date bred	Bull used	Sex of calf	Calf's name and eartag number	Remarks (Disposal, etc.)
1	1-8-27	#382	H	Sally 1986783	raised (see page 46)
2	2-6-28	#382	B	✓	vealed
3	1-26-29	#452	B	✓	vealed
4	1-11-30	#452	H	Spot 208758	raised (see page 47)
5	12-28-30	#452	H	Blackie 2178759	raised (sold as 2 yr old to John Smith)
6	1-13-32	#435	B	✓	raised (sold to John Jones)
7	1-5-33	#435	Cow sold before freshening to James Doe		

Figure 10.—*Individual-cow record in the owner's permanent herd-record book, properly filled out.*



BDI-1058

HERD-SIRE RECORD

Page 1

Sire's name and no. Sir King Vale 179678 Born Jan 15, 1922

Owner John Doe Address Brownsville, D.C. Date purchased Oct 22, 1923

Date disposed Feb. 15, 1926 To whom James Doe Reason To prevent inbreeding

Production Records of Sire's Daughters and Their Dams *

	Milk	Percent	Fat
Number of pairs 22			
Average production (daughters)	11715	3.2	378
Average production (dams)	10057	3.3	333
Increase (+) or decrease (−)	+1658	−.1	+45
Average production of all (26 Number) daughters	11393	3.2	368

Sire's Pedigree

	Milk	Percent	Fat
Sire Sir King John 142136			
Number of pairs 10			
Average production (daughters)	10249	3.3	334
Average production (dams)	9562	3.2	308
Increase (+) or decrease (−)	+687	+.1	+26
Average production of all (14 Number) daughters	10361	3.2	336
Dam Cornucopia Vale 962356			
First lactation	12560	3.8	477
4 Records (average)	13678	3.9	533
Average production of 6 daughters	14578	4.0	583

Baron of Shadyside 101012

Countess Johanna 826354

Cornucopia Posch 126431

Ellen of Barcroft 765361

Sire's Sons in Service

Name	Born	Date Sold	Herds in Which Used: Name	Address	Remarks
Sir Esther King 201036	3-15-24	7-20-24	James Smith	Galena, D.C.	
Sir King Thomas 223142	6-20-24	5-15-25	Peter Jones	Elkton, D.C.	

* All records should consist of the first 305 days' production, raised to mature equivalent, and corrected to a twice-a-day milking basis.

SIRE'S REPRODUCTION RECORD

Male Calves				Female Calves			
Name and No.	Date Born	Dam	Services per Conception	Name and No.	Date Born	Dam	Services per Conception
201036 Sir Esther King	3-15-24	824361 Esther of Barcroft	1	168560 Olive Cornucopia	6-20-25	144424 Queen Cornucopia	2
223142 Sir King Thomas	6-20-24	876122 Elain of Barcroft	3	1786506 Jane Esther Posch	8-23-25	1658724 Jane Esther Ethel	2

FIGURE 11.—*Herd-sire record in the owner's permanent herd-record book, properly filled out.*

Reporting Identification, Production, and Feed Data

AFTER the tester has established the identity of all animals in the herd, either by means of DHIA eartags or registration numbers or both, he reports the identification number of each animal in the herd (grade and registered) on the permanent DHIA identification-record report (form BDI–717), as in figure 12. Detailed instructions for eartagging the animals and for reporting the identity of all animals are given on pages 30 to 32.

The records obtained by dairy herd-improvement associations are accumulated and tabulated by the Bureau of Dairy Industry and used in a Nation-wide program for proving association sires and evaluating dairy cattle family lines as to the inheritance they possess for milk- and butterfat-producing capacity. For this purpose the tester reports the lactation records of all cows as they end the first 305 days of their lactation period. These reports are made on the permanent DHIA production-record report (form DDI–718), as in figure 13. Detailed instructions for reporting lactation records for permanent recording are given on pages 32 to 34.

Monthly Association Summary

Form BDI–4 (Monthly Association Summary) is used by the tester to report a monthly summary of all herds in the association, in those States where this report is required.

The headings on this form are similar to those on the Monthly Herd Summary form in the herd-record book, from which the tester copies the required data for each herd. The tester should copy the data on the day he tests the herd. By recording the data for one herd each day, all herds will be recorded at the end of the month and the report will be ready to mail to the State extension dairyman.

Yearly Individual-Cow Report

The individual-cow report blank (BDI–46) is used by the tester to report the yearly record of each cow in the herd. This form is attached to the inside back cover of the herd-record book. It should be filled out promptly at the close of the testing year, removed from the book, and sent at once to the State extension dairyman, who forwards it to the Bureau of Dairy Industry for tabulation and study. Figure 14 shows a report completely filled out by the tester.

The records of all cows that have been on test at any time during the year should be copied directly without any changes from the pages of the herd-record book. For each cow on test give name and number of cow, breed, age, weight, freshening date, months on test, months in milk, production of milk and butterfat, and feed consumption. Instructions for reporting the quality of feed and the market data follow.

(1) Give definite name of each feed consumed. If concentrates are fed as a mixture, give the percentage of digestible crude protein.

(2) Report quality of roughages as "good," "medium," and "poor." In cases where quality varies during the year, give the average quality of the roughage. The following points should be considered in determining the quality of the roughages.

HAY:

Good quality (U. S. No. 1). Shall be early-cut, leafy, natural green, fine-stemmed, relatively free from weeds or other foreign material, sound and sweet.

Medium quality (U. S. No. 2). Shall be at least moderately leafy, medium green to greenish brown; may contain an appreciable quantity of weeds or other foreign material; shall not be coarse and woody, overripe, musty, or moldy.

Poor quality (U. S. No. 3 and Sample grade). May contain a low percentage of leaves, may be brown or otherwise low in green color; badly overripe, badly weathered, musty, moldy, coarse, and woody; may contain an excess of weeds or other foreign material or more than a trace of injurious foreign material such as sand burs (mechanically injurious) or whorled milkweed (poisonous).

PASTURE:

Good. Luxuriant growth, ground covered with succulent and palatable growing grass. Fine texture. Not coarse or woody. Growth rapid enough to maintain plentiful supply of nutrients. Few weeds.

Medium. Ground well covered with good growing grass. Crop too short to maintain a plentiful supply of feed or is slightly coarse or woody. Some weeds. May be slightly dry, but palatable.

Poor. Crop short. Not sufficient to maintain ample supply of feed or is coarse, woody, or weedy. Dry. Not palatable.

(3) Report the type of market to which the product is sold. In cases where more than one type of market was used during the year, indicate the percentage of product sold in each type of market. Thus, if 60 percent of the product was sold as market milk to a distributor, and 40 percent as manufacturing milk to a creamery, it should be so reported.

Yearly Association Herd Summary

The yearly association herd-summary form (BDIM–780) is used only when the tester is authorized to report records on a herd basis. Some States prefer to send herd totals rather than individual-cow records to the Bureau of Dairy Industry for tabulation and summarization. Other States, however, need the individual-cow records to conduct special studies.

The tester, therefore, *should not* use form BDIM–780 unless specifically authorized by the State extension dairyman.

When testers are authorized to report data on a herd basis they should do so according to the following procedure. The instructions should be followed closely.

(1) Report individual records, as just outlined under the heading Yearly Individual-Cow Report, on *only* three herds in the association. This report (BDI–46) should be made on the *first three herds* tested in the association that have been on test a full year, regardless of size, level of production, breed, management, etc., of the herds. No other selection of herds should be made.

(2) For every herd in the association, including the three herds reported on form BDI–46, the tester should report the herd totals on form BDIM–780, as shown in figure 15. It will be noted that most of the headings on form BDIM–780 are similar to those on the Monthly Herd Summary form, from which the data can be copied directly. Columns are provided for reporting total cow-months each herd was on test, days on pasture, kind and quality of roughage, and data on marketing the product. Examples for filling in these columns on BDIM–780 follow.

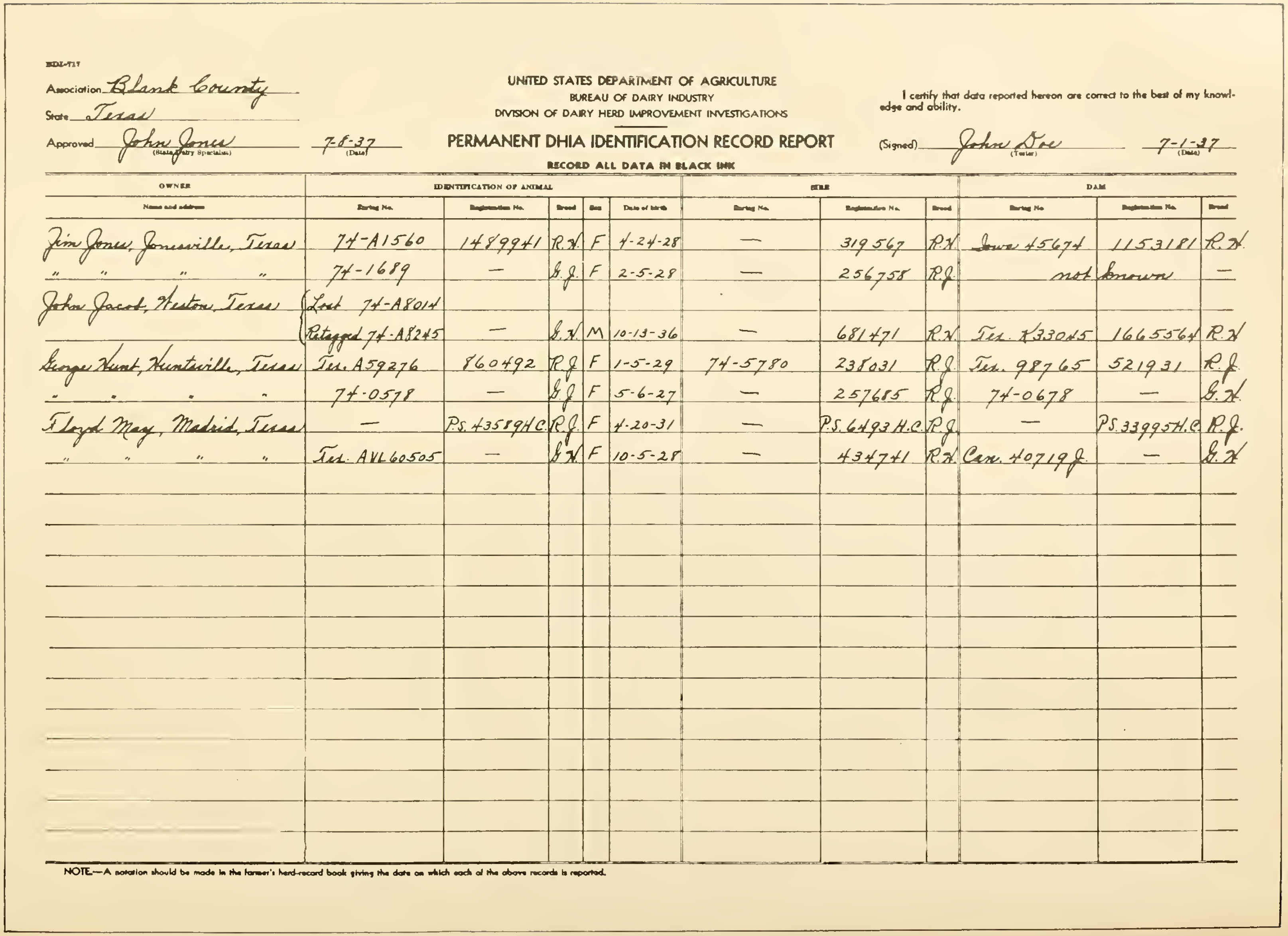
In the column "Total cow-months on test" place the total number of single cow-months represented in the data. This figure is obtained by simply adding the number of cows on test (not cows in milk) in the herd each month during the testing year. To illustrate:

	Cows on test		Cows on test
First month	15	Eighth month	14
Second month	16	Ninth month	16
Third month	13	Tenth month	13. 4
Fourth month	11. 6	Eleventh month	15
Fifth month	14	Twelfth month	18
Sixth month	16		
Seventh month	15	Total cow-months	177

Report the days on pasture as "total cow-days," that is, the total number of single cow-days. To illustrate how cow-days on pasture are calculated:

	Cow-days
14 cows on test first month of pasture for 15 days	210
16 cows on test second month of pasture for 31 days	496
15 cows on test third month of pasture for 31 days	465
14 cows on test fourth month of pasture for 30 days	420
16 cows on test fifth month of pasture for 10 days	160
Total cow-days on pasture	1,751

In reporting the total pounds of roughages fed, indicate also the quality of roughages by G, M, or P (good, medium, or poor) as shown in figure 15. The average quality of the pasture is reported with the number of "cow-days on pasture." The percentage of protein in home and commercial mixes (of concentrates) shall be written above the number of pounds as shown in figure 15.



BDI-717

Association Blank County
State Texas
Approved John Jones (State Dairy Specialist) 7-8-37 (Date)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF DAIRY INDUSTRY
DIVISION OF DAIRY HERD IMPROVEMENT INVESTIGATIONS

PERMANENT DHIA IDENTIFICATION RECORD REPORT

RECORD ALL DATA IN BLACK INK

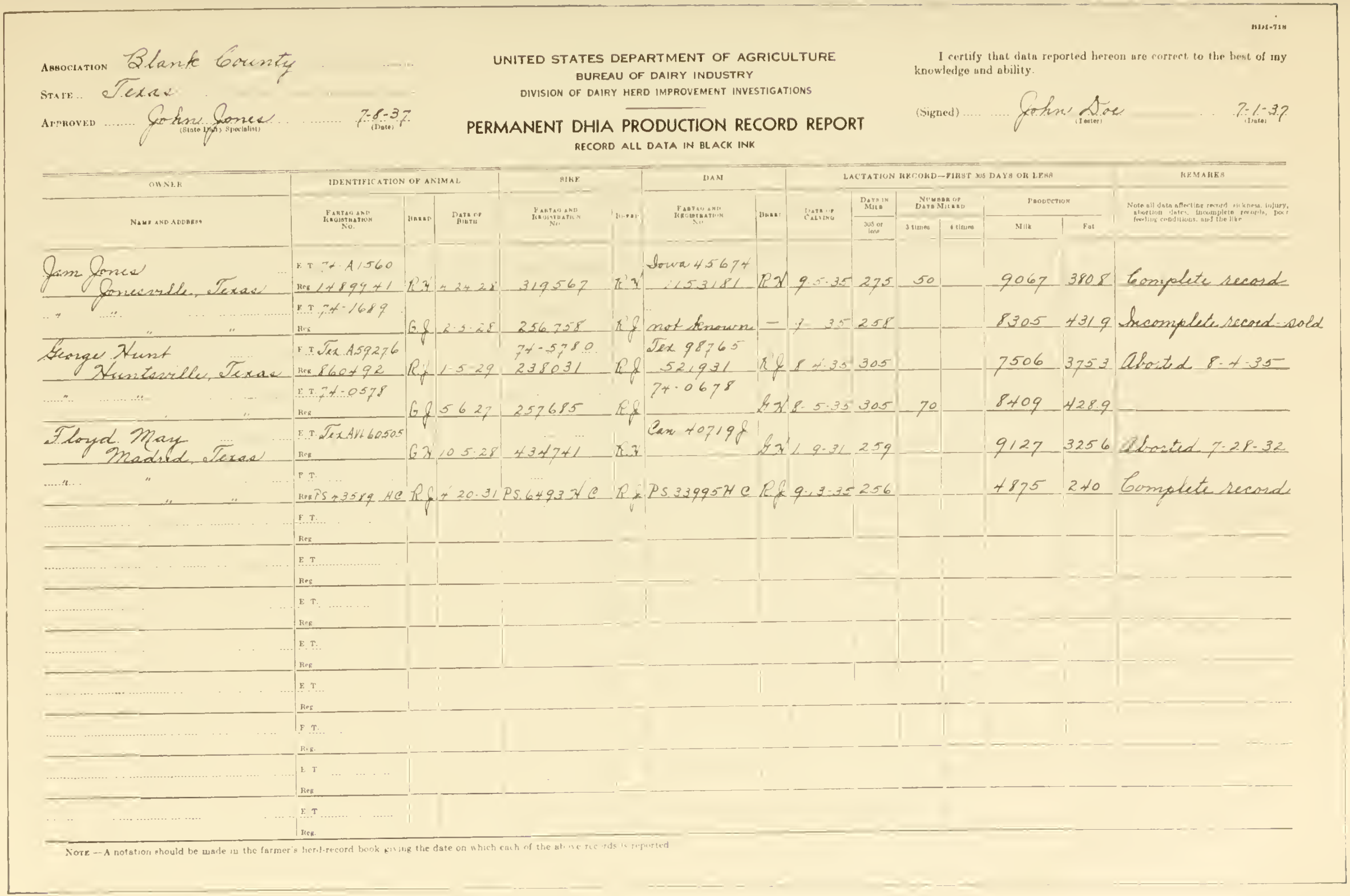
I certify that data reported hereon are correct to the best of my knowledge and ability.

(Signed) John Doe (Tester) 7-1-37 (Date)

OWNER	IDENTIFICATION OF ANIMAL					SIRE			DAM		
Name and address	Earing No.	Registration No.	Breed	Sex	Date of birth	Earing No.	Registration No.	Breed	Earing No.	Registration No.	Breed
Jim Jones, Jonesville, Texas	74-A1560	1489941	R.H.	F	4-24-28	—	319567	R.H.	Iowa 45674	1153181	R.H.
" " " "	74-1689	—	G.J.	F	2-5-28	—	256758	R.J.	not	known	—
John Jacob, Weston, Texas	Lost 74-A8014										
	Retagged 74-A8245	—	G.H.	M	10-13-36	—	681471	R.H.	Tex. K33045	1665564	R.H.
George Hunt, Huntsville, Texas	Tex. A59276	860492	R.J.	F	1-5-29	74-5780	238031	R.J.	Tex. 98765	521931	R.J.
" " " "	74-0578	—	G.J.	F	5-6-27	—	257685	R.J.	74-0678	—	G.H.
Floyd May, Madrid, Texas	—	P.S. 43589HC.	R.J.	F	4-20-31	—	P.S. 6493 H.C.	R.J.	—	P.S. 33995H.C.	R.J.
" " " "	Tex. AVL60505	—	G.H.	F	10-5-28	—	434741	R.H.	Can. 40719J.	—	G.H.

NOTE.—A notation should be made in the farmer's herd-record book giving the date on which each of the above records is reported.

FIGURE 12.—*Permanent identification-record report, properly filled out.*



BDI-718

Association Blank County

State Texas

Approved John Jones (State DHIA Specialist) 7-8-37 (Date)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF DAIRY INDUSTRY
DIVISION OF DAIRY HERD IMPROVEMENT INVESTIGATIONS

PERMANENT DHIA PRODUCTION RECORD REPORT
RECORD ALL DATA IN BLACK INK

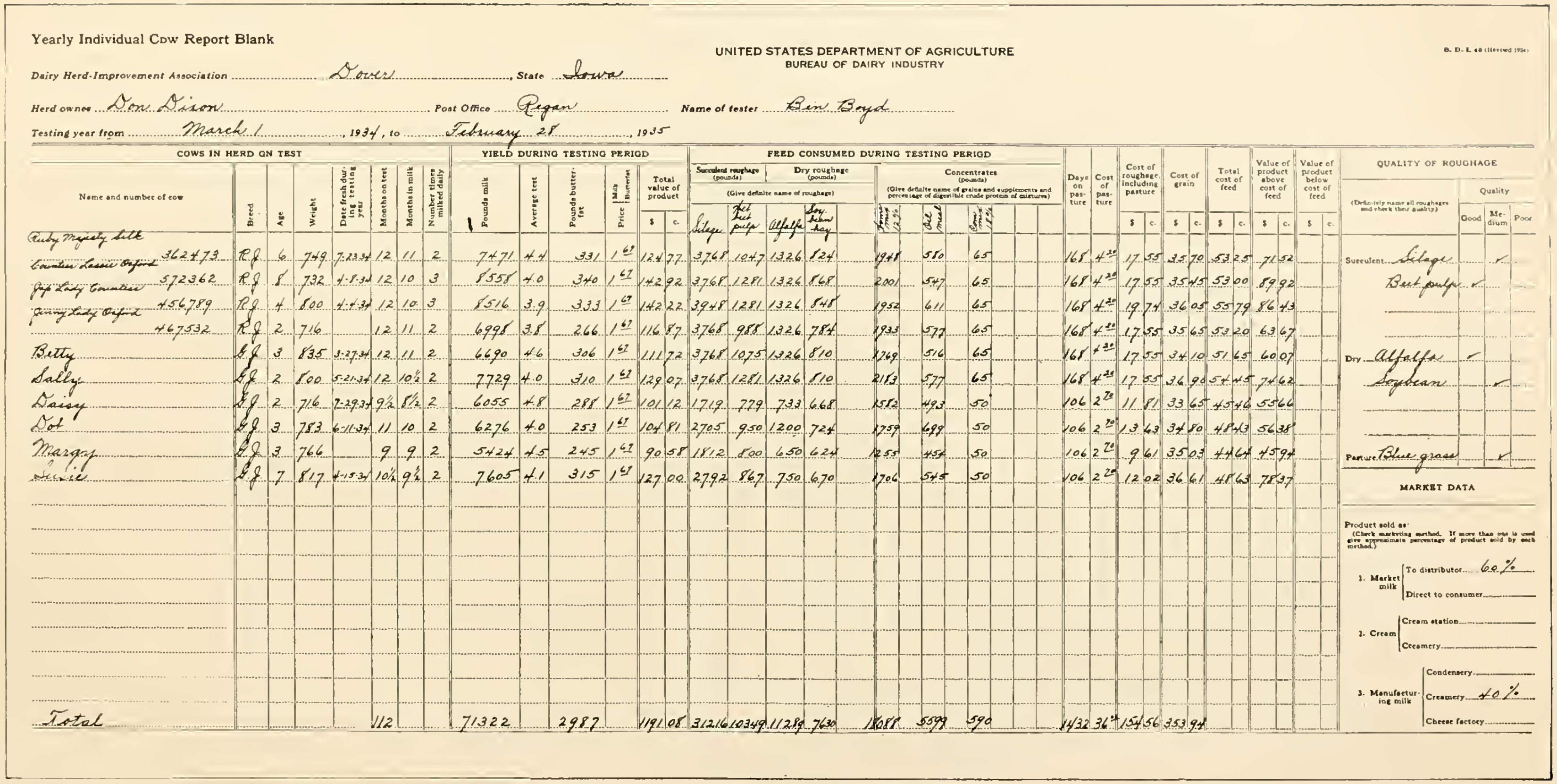
I certify that data reported hereon are correct to the best of my knowledge and ability.

(Signed) John Doe (Tester) 7-1-37 (Date)

Owner	Identification of Animal			Sire		Dam		Lactation Record—First 305 Days or Less						Remarks
									Days in Milk	Number of Days Milked		Production		
Name and Address	Fartag and Registration No.	Breed	Date of Birth	Fartag and Registration No.	Breed	Fartag and Registration No.	Breed	Date of Calving	305 or less	3 times	4 times	Milk	Fat	Note all data affecting record, sickness, injury, abortion dates, incomplete records, poor feeding conditions, and the like
Jim Jones Jonesville, Texas	F. T. 74-A1560 Reg. 1489941	R H	4-24-28	319567	R H	Iowa 45674 1153181	R H	9-5-35	275	50		9067	380.8	Complete record
" "	F. T. 74-1689 Reg.	G J	2-5-28	256758	R J	not known	—	7- 35	258			8305	431.9	Incomplete record—sold
George Hunt Huntsville, Texas	F. T. Tex A59276 Reg. 860492	R J	1-5-29	74-5780 238031	R J	Tex 98765 521931	R J	8-4-35	305			7506	375.3	Aborted 8-4-35
" "	F. T. 74-0578 Reg.	G J	5-6-27	257685	R J	74-0678	G H	8-5-35	305	70		8409	428.9	
Floyd May Madrid, Texas	F. T. Tex AV460505 Reg.	G H	10-5-28	434741	R H	Can 40719J	G H	1-9-31	259			9127	325.6	Aborted 7-28-32
" "	F. T. Reg. PS 43589 HC	R J	4-20-31	PS 6493 HC	R J	PS 33995HC	R J	9-3-35	256			4875	240	Complete record
	F. T. Reg.													
	F. T. Reg.													
	F. T. Reg.													
	F. T. Reg.													
	F. T. Reg.													
	F. T. Reg.													
	F. T. Reg.													
	F. T. Reg.													

NOTE.—A notation should be made in the farmer's herd-record book giving the date on which each of the above records is reported.

FIGURE 13.—*Permanent production-record report, properly filled out.*



Yearly Individual Cow Report Blank

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF DAIRY INDUSTRY

B. D. I. 48 (Revised 1934)

Dairy Herd-Improvement Association Dover, State Iowa

Herd owner Don Dixon Post Office Regan Name of tester Ben Boyd

Testing year from March 1, 1934, to February 28, 1935

COWS IN HERD ON TEST: Name and number of cow	Breed	Age	Weight	Date fresh during testing year	Months on test	Months in milk	Number times milked daily	YIELD DURING TESTING PERIOD: Pounds milk	Average test	Pounds butterfat	Price Milk / Butterfat	Total value of product $	c.	FEED CONSUMED DURING TESTING PERIOD: Succulent roughage (pounds): Silage	Wet beet pulp	Dry roughage (pounds): Alfalfa	Soybean hay	Concentrates (pounds): Home mix 12%	Oil meal	Corn mix 18%	Days on pasture	Cost of pasture	Cost of roughage, including pasture $	c.	Cost of grain $	c.	Total cost of feed $	c.	Value of product above cost of feed $	c.	Value of product below cost of feed $	c.
Ruby Majesty Silk 362473	R.J.	6	749	7-23-34	12	11	2	7471	4.4	331	1.67	124	77	3768	1047	1326	824	1948	580	65	168	4.20	17	55	35	70	53	25	71	52		
Countess Lassie Oxford 572362	R.J.	8	732	4-8-34	12	10	3	8558	4.0	340	1.67	142	92	3768	1281	1326	868	2001	547	65	168	4.20	17	55	35	45	53	00	89	92		
Gyp Lady Countess 456789	R.J.	4	800	4-4-34	12	10	3	8516	3.9	333	1.67	142	22	3948	1281	1326	848	1952	611	65	168	4.20	19	74	36	05	55	79	86	43		
Jenny Lady Oxford 467532	R.J.	2	716		12	11	2	6998	3.8	266	1.67	116	87	3768	988	1326	784	1933	577	65	168	4.20	17	55	35	65	53	20	63	67		
Betty	G.J.	3	835	3-27-34	12	11	2	6690	4.6	306	1.67	111	72	3768	1075	1326	810	1749	516	65	168	4.20	17	55	34	10	51	65	60	07		
Sally	G.J.	2	800	5-21-34	12	10½	2	7729	4.0	310	1.67	129	07	3768	1281	1326	810	2183	577	65	168	4.20	17	55	36	90	54	45	74	62		
Daisy	G.J.	2	716	7-29-34	9½	8½	2	6055	4.8	288	1.67	101	12	1719	779	733	668	1582	493	50	106	2.70	11	81	33	65	45	46	55	66		
Dot	G.J.	3	783	6-11-34	11	10	2	6276	4.0	253	1.67	104	81	2705	950	1200	724	1759	699	50	106	2.70	13	43	34	80	48	43	56	38		
Margy	G.J.	3	766		9	9	2	5424	4.5	245	1.67	90	58	1812	800	650	624	1255	454	50	106	2.70	9	61	35	03	44	64	45	94		
Susie	G.J.	7	817	4-15-34	10½	9½	2	7605	4.1	315	1.67	127	00	2792	867	750	670	1706	545	50	106	2.70	12	02	36	61	48	63	78	37		
Total					112			71322		2987		1191	08	31216	10349	11289	7630	18088	5599	590	1432	36.30	154	56	353	94						

QUALITY OF ROUGHAGE

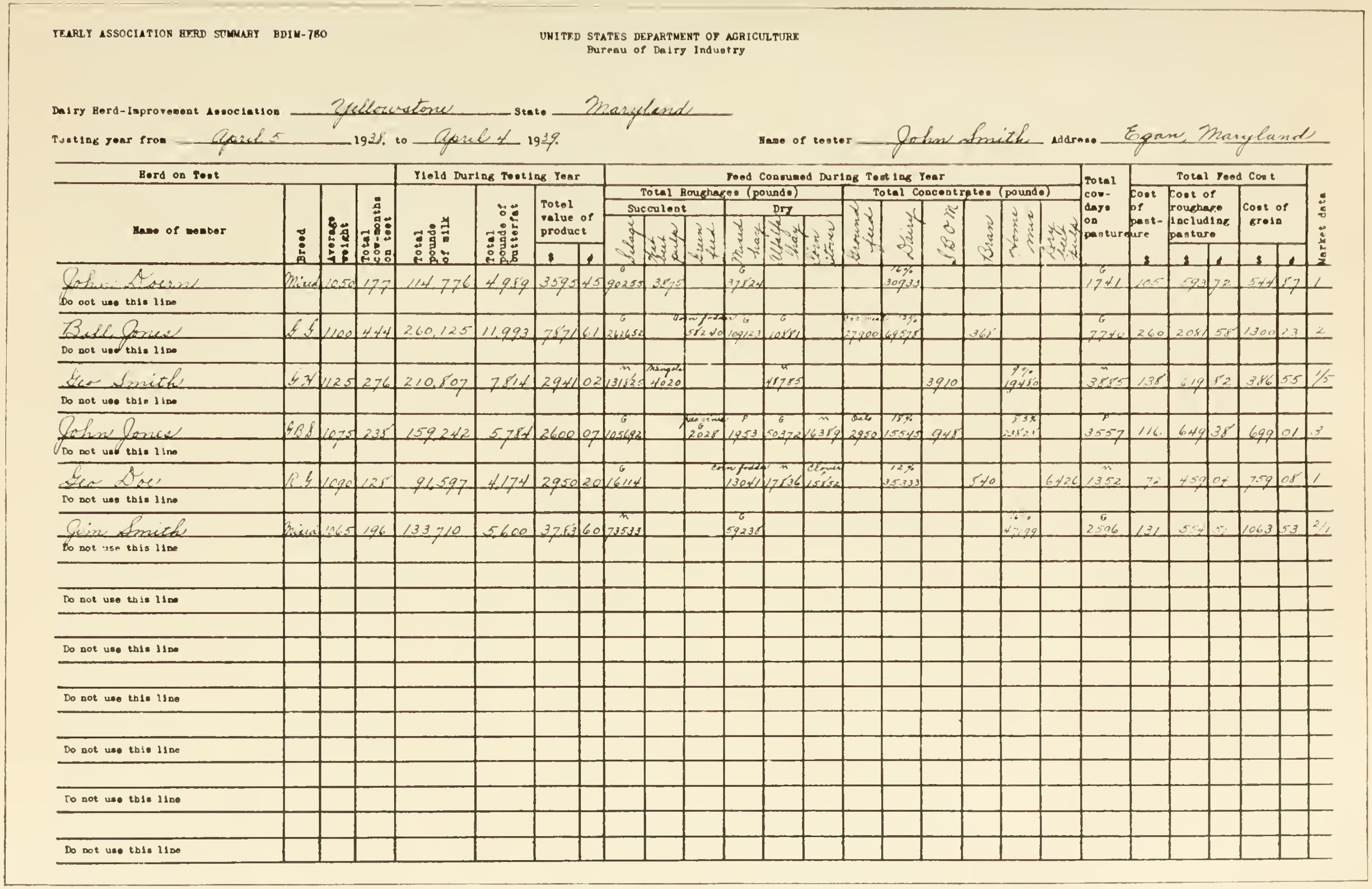
(Definitely name all roughages and check their quality)	Good	Medium	Poor
Succulent Silage		✓	
Beet pulp	✓		
Dry Alfalfa	✓		
Soybean		✓	
Pasture Blue grass		✓	

MARKET DATA

Product sold as:
(Check marketing method. If more than one is used give approximate percentage of product sold by each method.)

1. Market milk
   - To distributor 60%
   - Direct to consumer
2. Cream
   - Cream station
   - Creamery
3. Manufacturing milk
   - Condensery
   - Creamery 40%
   - Cheese factory

FIGURE 14.—*Yearly individual-cow report, properly filled out.*



YEARLY ASSOCIATION HERD SUMMARY BDIM-780

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Dairy Industry

Dairy Herd-Improvement Association Yellowstone State Maryland

Testing year from April 5 1938, to April 4 1939. Name of tester John Smith Address Egan, Maryland

Herd on Test				Yield During Testing Year				Feed Consumed During Testing Year												Total cow-days on pasture	Total Feed Cost					Market date
						Total value of product		Total Roughages (pounds)						Total Concentrates (pounds)							Cost of pasture	Cost of roughage including pasture		Cost of grain		
								Succulent			Dry															
Name of member	Breed	Average weight	Total cow-months on test	Total pounds of milk	Total pounds of butterfat	$	¢	Silage	Wet beet pulp	Green feed	Mixed hay	Alfalfa hay	Corn stover	Ground feed	Dairy	SBOM	Bran	Home mix	Dry beet pulp		$	$	¢	$	¢	
John Doern	Mixed	1050	177	114,776	4,989	3595	45	G 90255	3875		G 37824				16% 30933					G 1741	105	593	72	544	87	1
Do not use this line																										
Bill Jones	G G	1100	444	260,125	11,993	7871	61	G 262652		Corn fodder 58240	G 109123	G 10881		Pea meal 27900	12% 69578		368			G 7740	260	2081	58	1300	23	2
Do not use this line																										
Geo Smith	G H	1125	276	210,807	7,814	2941	02	m 131825	Mangels 4020			m 48785				3910		9% 19480		m 3885	138	619	82	386	55	1/5
Do not use this line																										
John Jones	G B S	1075	235	159,242	5,784	2600	07	G 105692		Pea vine G 2028	P 1953	G 50372	m 16389	Oats 2950	18% 15545	948		33% 23825		P 3557	116	649	38	699	01	3
Do not use this line																										
Geo Doe	R G	1090	125	91,597	4,174	2950	20	G 16114			Corn fodder 13041	m 17836	Clover 15852		12% 35333		540		6426	m 1352	72	459	04	759	08	1
Do not use this line																										
Jim Smith	Mixed	1065	196	133,710	5,600	3753	60	m 73533			G 59238							16% 47799		G 2596	131	554	57	1063	53	2/1
Do not use this line																										
Do not use this line																										
Do not use this line																										
Do not use this line																										
Do not use this line																										
Do not use this line																										
Do not use this line																										

FIGURE 15.—*Yearly association herd summary, completely filled out.*

Market data should be reported according to the following code:

	Code numeral
Market milk to distributor	1
Market milk direct to consumer	2
Cream to cream station	3
Cream to creamery	4
Manufacturing milk to condensery	5
Manufacturing milk to creamery	6
Manufacturing milk to cheese factory	7

To illustrate: Where a farmer sold his milk as market milk to a distributor, the numeral 1 would be written in the column "Market data", as shown in figure 15. Another farmer sold more than half of the milk during the year as market milk to a distributor and the remainder as manufacturing milk to a condensery, in which case it is reported as 1/5, as shown in figure 15. But if more than half of the milk was sold as manufacturing milk it should be reported as 5/1.

Uniform Testing Rules

THE procedure the tester must follow on each farm in testing the herd and filling out the production reports has been outlined in previous pages.

The uniform rules approved by the American Dairy Science Association in June 1938 contain further instructions that the tester must follow when determining and reporting the quantity of milk, the butterfat test, and the quantity of butterfat produced by each cow on test in the association. These "Uniform rules governing the operation of dairy-herd-improvement associations" are quoted in full below:

STANDARD EQUIPMENT

The standard equipment should consist of the following:

A 60-pound milk scale.
A 24-bottle Babcock tester.
Standard glassware:
  (*a*) Thirty or more milk test bottles.
  (*b*) Two pipettes.
  (*c*) Two skim-milk test bottles.
Two acid measures or dippers.
Thirty or more sample jars (2- or 4-ounce bottles).
Sample dipper.
Water bath.
Dairy thermometer (tested).
Dividers.
Computing book or slide rule.
Extra milk pail.
Test bottle and sample bottle brushes.
Lock and key.
Field box with trays that can be locked.
Commercial sulfuric acid (1.82 specific gravity).
DHIA eartagging outfit.
Canvas bag or brief case.
Tape for estimating weights of cows.

PRODUCTION AND IDENTIFICATION RECORDS MUST BE PERMANENTLY RECORDED

The tester shall make identification (BDI-717) and permanent-record (BDI-718) reports on all animals in herds owned by members cooperating in the identification project in accordance with provisions given under Recording the Identity and Production Performance of all Animals in Dairy Herd-Improvement Associations (pp. 30–35).

Arranging the Test

Cows to be tested.—Records are to be kept on all cows that are in the herd on the day the tester visits the farm. Every cow that has ever freshened must be included regardless of stage of lactation. If all cows in the herd are not included in the record, all monthly and yearly publicity is to be withheld.

Monthly and bimonthly testing.—Associations may operate on the monthly or bimonthly basis, or on both. However, no breeder should shift from one method to the other during any testing year.

Number of cows tested daily.—Thirty (30) cows tested shall constitute a day's work.

Doubling herds.—It is recommended that as a general rule only one herd be tested in 1 day.

Supervision of milking.—The location of the cows being milked should be such that the tester can effectively observe the milking at all times.

Identification of cows being milked.—The tester should identify each cow at the time of milking.

Testers use own data.—The tester shall compute the production records for the testing period from the data he obtains on the testing day.

Centering the testing day.—Production records shall be calculated by centering the testing day according to the method outlined under establishing the Monthly Testing Period (pp. 23 25).

Tester's route.—In order that the herd owner may not know the exact day the tester will visit a farm, the tester shall, from time to time, vary his visits to each farm as much as 2 days ahead of, or 2 days after, the regular testing day. (Regardless of such variation, however, all calculations should be made on the basis of the regular testing day established for the herd.)

Lock sample cases.—All milk samples and glassware must be kept under lock and key at all times to prevent outside criticism and to insure reliable records.

Method of sampling.—All weighing, sampling, and recording of each milking of each cow for the 24-hour period must be done by the tester.

APPLYING THE TEST

The Babcock test is to be used in all dairy herd-improvement associations. In applying the Babcock test the official rules adopted by the American Dairy Science Association shall be followed.

Testing whole milk.—From a thoroughly mixed sample 17.6 cc. of milk is taken with a pipette graduated for that amount. This milk is then transferred from the pipette to the milk test bottle. The temperature of the milk at the time of testing should be between 60° and 70° F. and the acid to be added should be at about the same temperature. With the acid measure, 17.5 cc. of standard commercial sulfuric acid is then poured down the inside of the test bottle in such a way that it will wash down any particles of milk adhering to the inside of the neck of the bottle. Having a specific gravity much greater than that of the milk, the acid collects at the bottom of the test bottle. Next the test bottle is rotated and gently shaken until the milk and acid are thoroughly mixed.

Next the test bottles are placed in the sockets of the Babcock tester, which is set in motion and whirled for 5 minutes at a rapid rate. The proper speed varies from 1,000 revolutions per minute for a centrifuge having a diameter of 12 inches to 800 per minute for one having a diameter of 18 inches. In cold weather the centrifuge should be placed in a warm room for 2 or 3 hours before being used.

After the first whirling, hot water is added to each bottle until the contents reach the lower part of the neck. The whirling is then repeated for 2 minutes. More hot water is added until the fat reaches a point in the neck of the bottle where the percentage of fat may be read from the graduation marks. The whirling is then repeated for another minute in order to clarify the upper and lower meniscus of the fat column. The hot water used should be hot enough to maintain the bottles at a temperature between 130° and 140° F. Soft water gives best results. After the final whirling, the test bottles should be set into a water bath so that the entire butterfat column is surrounded and read after a temperature of 135° to 140° F. has been maintained for not less than 3 minutes.

The percentage of fat is read by measuring the length of the fat column from the lowest point to the highest point of the column with an ordinary pair of dividers. One point of the dividers is then placed on the zero point and the other on the scale and the point of the scale indicates the percentage of fat in the milk.

Testing skim milk.—The testing of skim milk for butterfat is useful in determining the amount of butterfat left in the skim milk after the milk has been run through the cream separator. The skim-milk test bottle has two necks. One neck is of small bore and graduated to read the percentage of fat in hundredths and the other, which extends almost to the bottom of the bottle, is of larger bore and conveys the acid and hot water used in the test. In testing skim milk, 17.5-cc. sample is used, together with 20 cc. of sulfuric acid. The acid is added in two parts of 10 cc. each and the acid and skim milk are thoroughly mixed after each addition. The first whirling of the bottles is continued for 2 minutes longer than in testing whole milk.

Testing cream.—Under no conditions may a tester test cream. Cream varies in weight and cannot be sampled accurately with a pipette. The testers are not equipped with scales for weighing cream samples and must not attempt to test cream for members.

RETESTING

The retest is advisable to give confidence in dairy herd-improvement association records. The following rules are recommended: If on any test after the first one following freshening a *cow produces the following amounts or more*, or if on any test *the herd average is as much as or more than the amounts listed below*, a retest shall be made automatically by the tester.

(1) Cows milked twice daily:

(*a*) Cows 3½ years of age or under at the time of last freshening producing 2.5 pounds of butterfat on day of test.

(*b*) Cows over 3½ years of age at time of last freshening producing 2.8 pounds of butterfat on day of test.

(2) Cows milked three or four times daily:

(*a*) Cows 3½ years of age or under at time of last freshening producing 2.8 pounds of butterfat on day of test.

(*b*) Cows over 3½ years of age at time of last freshening producing 3.0 pounds of butterfat on day of test.

(3) Herds:

(*a*) Any herd in which all cows are milked twice daily making a herd average of 50 pounds of butterfat.

(*b*) Any herd in which more than half of the cows are milked more than twice daily, making a herd average of 55 pounds of butterfat.

When a cow or herd produces the above amounts or more the tester shall stay over the following day and continue the test for another 24-hour period. When the retest is finished the results shall be used to determine the production for that testing period. All costs of the retest must be paid by the owner of the cow or herd retested. The cost is not to be more than the prevailing rate schedule in use in the association.

Lost samples.—If for any reason the sample is spilled or lost and another sample cannot be obtained, the records shall be held open until the following month when the average of the previous month's production and the following month's production should be taken as the production for the current month.

TESTING FRESH COWS—OTHER SPECIAL CASES

Fresh Cows.—A cow should not be tested until the seventh day after she calves, counting the day of calving as the first day. The record, however, is started on the fourth day after calving, counting the calving day as the first day.

Cows freshening after the tester's regular visit and before the end of the testing period should be given credit for their production during that period, as calculated on the basis of the results of the next test.

Cows with mastitis.—Cows with garget (mastitis) in one or more quarters should receive credit for only the production from the good quarters. If the infection is such that it renders the milk unsafe for human consumption, the cow should be considered as dry until the milk becomes usable.

Aborting cows or cows freshening without going dry.—In case a cow aborts while dry, her record shall be figured the same as for a fresh cow. If she aborts while in milk after 200 days following last freshening, her current record shall end and a new lactation record shall begin.

Cows nursing calves.—Cows nursing calves on the testing day should be considered for the time being as dry cows. Feed records are taken as usual and recorded in the herd-record book. No milk samples are to be taken. Weights and tests obtained on the first testing date after calves have been removed or the last testing date before calves are put on cows should be used in computing production for the testing periods in which calves were nursed, using the following factors:

Monthly testing period after freshening:

	Factor		Factor
First	1.00	Sixth	1.09
Second	1.00	Seventh	1.10
Third	1.06	Eighth	1.11
Fourth	1.07	Ninth	1.12
Fifth	1.08	Tenth	1.13

To illustrate, suppose a cow nursed calves for the first 3 months; in her fourth month of lactation she was tested and produced on the testing day 30 pounds of milk testing 3.5 percent butterfat. Her production for the testing days of the three previous testing periods would be computed in this manner:

	Milk, pounds
Fourth testing day's production	30.0
Third testing day's production (30×1.07)	32.1
Second testing day's production (32.1×1.06)	34.0
First testing day's production (34×1)	34.0

Let's say this same cow was milked until the sixth month when she started nursing calves. On the testing day during the fifth month she produced 27.8 pounds of milk testing 3.4 percent of butterfat. Her production for the testing day of the following testing periods would be computed in this manner:

	Milk, pounds
Fifth testing day's production	27.8
Sixth testing day's production (27.8÷1.09)	25.5
Seventh testing day's production (25.5÷1.10)	23.2
Eighth testing day's production (23.2÷1.11)	20.9
Ninth testing day's production (20.9÷1.12)	18.7
Tenth testing day's production (18.7÷1.13)	16.5

In computing the production of cows freshening on or before the 15th day of any calendar month, consider the month of freshening as the first testing period of the lactation in applying the factors in the table. When cows freshen after the 15th day of the month, consider the following calendar month as the first testing period in applying the above table.

Cows nursing calves after 10 months following freshening shall receive no credit for production.

When such records are reported on BDI–718 a notation should be made in the remarks column, giving the number of months for which production was calculated.

COMPUTING YEARLY AVERAGES

Yearly herd average.—This is figured on the "cow-year" basis. To get the number of cow-years, the number of months each cow in the herd is on test is totaled and this total divided by 12. In case a cow is not on test throughout the entire year (such as cows purchased or sold or that died, or heifers that freshen during the year) use the number of the whole months and divide the number of remaining days by 30. This gives the number of months the cow was on test. The total of the pounds of milk, pounds of butterfat, etc., divided by the number of cow-years gives the herd average for the year.

Fresh cows that cannot be tested on the tester's last visit of the year or cows freshening after the tester's last visit but before the end of the year will not receive credit for the last testing period's production unless the owner continues to test the following year. In this case the records can be completed the first test of the following year.

Yearly association avearge.—The association average is found by dividing the total pounds of milk and total pounds of butterfat by the total cow-years.

Computing fractions.—The weights of milk at each milking and the day's total of milk are recorded to the nearest one-tenth of a pound, the month's milk to the nearest whole pound, and the month's butterfat to the nearest one-tenth of a pound. The day's feed is figured to the nearest half pound and the month's feed to the nearest pound. All values should be figured to the nearest cent. Cow-months should be figured to the nearest one-tenth. Cow-years should be figured to the nearest one-hundredth.

If the fraction is half or less, drop it; if more than half, change it to the next highest number.

Monthly Testing Period

AT ONE time, the monthly testing period was the calendar month in which the herd was tested; that is, the tester would visit the farm 1 day each month and make his tests, and then multiply the data he obtained on the testing day by the number of days in the calendar month.

Now, however, a different monthly testing period is established for each herd, with the testing day as the approximate center of the testing period, so that the monthly data will be for a period beginning 15 days before the testing day and ending 13 to 16 days (depending on the number of days in the month) after the testing day. The same monthly testing period is used in calculating all factors relating to record work (production, feed consumption, cost of feed, gross income, and income over cost of feed), otherwise the various factors would be out of balance. The tester must thoroughly familiarize himself with, and always use, the centering method in calculating records.

The Centering Day

The tester's first visit to a farm to test the herd establishes the testing day, or so-called centering day, for that herd for the entire year. If, for example, his first visit is on the 5th of the month, the 5th of each succeeding month is the centering day for calculating the monthly data, even though he may not always be able to test the herd exactly on the 5th. Testing the herd a few days before or after the centering day makes little difference in the record.

The test, of course, is always for a 24-hour period, but since the tester usually arrives in the afternoon, leaving late the next day, he records the latter as the testing date. That, is, if he arrived on the 4th of the month (first visit), the 5th is recorded as the testing day.

Every herd in the association will be visited and tested on a different day and will, therefore, have a different centering day.

Use of the centering method avoids the inflation or deflation that results when production is calculated on a calendar-month basis, from tests made near the beginning or near the end of the month. Except for a short time after a cow freshens, her production is always declining. Therefore, if the tester visits a farm near the beginning of a month and calculates the month's production on the basis of his tests that day, the calculated production for that month is higher than the actual production, but if he tests the herd near the end of the month, when production has declined, the calculated production will be lower than the actual production for that month. The records of herds tested at the beginning of a month would be inflated and records of herds tested near the end of a month would be deflated, as compared to actual production. This has resulted in some dairymen insisting that the tester visit their farms near the beginning of each month, in order that their herds may make the best showing. When the centering method is used, it makes no difference when the tests are made, as the records are neither inflated nor deflated. Moreover, since production records are being widely used to prove sires, it becomes increasingly important that all testers use the centering method in calculating the records of cows on test in dairy herd-improvement associations.

The following example illustrates how production records are inflated or deflated when calculated on the calendar-month basis. A cow was actually tested twice a month on the 5th and 25th of each month. The cow freshed December 15, her milk was good December 18, and she went dry October 30. The amount of milk that she produced on different testing days is shown in table 1.

Table 1.—*Actual milk production on the 5th and 25th day of each month the cow was in milk*

Month and testing day	Milk produced
	Pounds
December 25	30
January 5	35
25	39
February 5	43
25	45
March 5	42
25	41
April 5	38
25	35
May 5	32
25	30
June 5	28
25	25
July 5	23
25	19
August 5	16
25	14
September 5	12
25	10
October 5	9
25	5

The results of the calculations on the calendar-month basis are shown in table 2. It is observed that the yearly record is 8,892 when based on tests made on the 5th of the month and 8,363 when based on tests made the 25th of the month; a difference of 529 pounds. The errors in both calculations are shown graphically in figure 16, *A* and *B*, The plus area (+) in each month represents the inflation and the minus area (—) the deflation, as compared with the actual production for the month. In figure 16, *A*, based on the 5th day of the month, the plus area is larger than the minus area in most months; and the yearly record is inflated as compared with the actual production for the year. In figure 16, *B*, based on the 25th day of the month, the minus area is larger than the plus area in most months and the yearly record is deflated.

Table 2 also shows the record calculated from tests made on the 5th of the month using the centering method. The 5th of the month becomes the centering day. The first monthly testing period, however, runs back to the day the milk became normal (December 18) or 18 days, and forward (including January 20) 16 days. (*If the centering or testing day is in a 28-day month the testing period runs forward 13 days, including the testing day, in a 29-day month 14 days, in a 30-day month 15 days, and in a 31-day month 16 days.*) The total number of days in the first monthly testing period for this cow, therefore, is 18+16, or 34 days. It will be noted that for all testing periods, *except the first and the last*, the records are calculated exactly the same as when the calendar-month method was followed. The production for the last testing period is calculated in the same way as that for the first period. Under the centering method, *except for the first testing period*, there are *always 15 days in that part of the testing period previous to, but not including the testing day*. Since the cow went dry October 30, there are 26 days following and including the last testing day. The

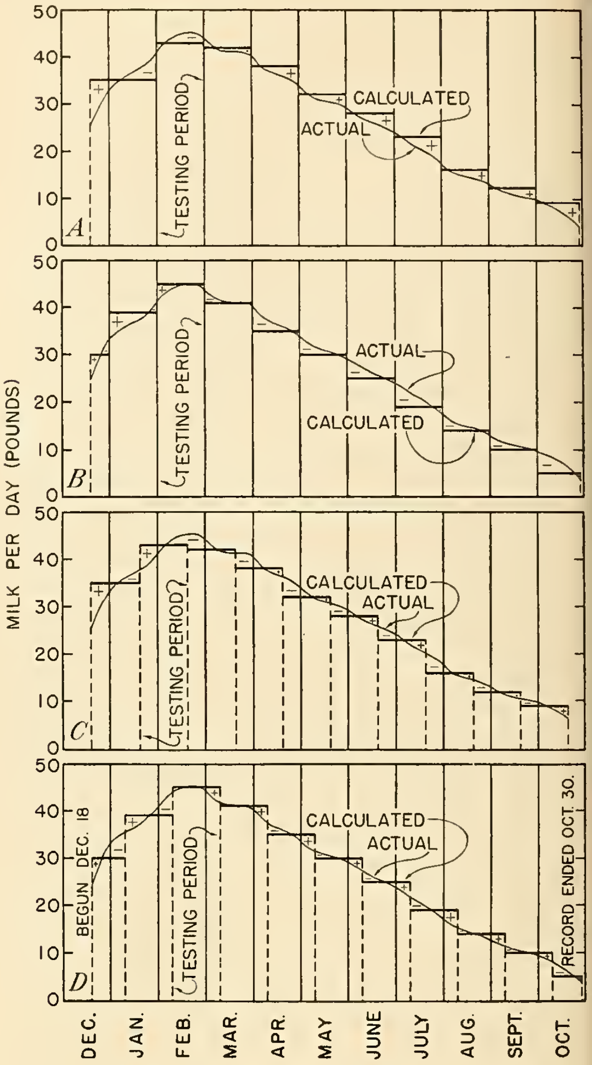


Figure 16.—*Milk production as calculated for each month or testing period by the calendar-month method from tests made on* (*A*) *the 5th day and* (*B*) *the 25th day of each month and by the centering method from tests made on* (*C*) *the 5th day and* (*D*) *the 25th day of each month, as compared with the actual production. The plus* (+) *or minus* (—) *areas show extent of inflation or deflation, respectively, in each case.*

Table 2.—*Difference in total milk production as calculated by calendar-month method between results from tests made on the 5th and 25th of the month; and close agreement when total production is calculated by centering system between results from tests made on the 5th and 25th of the month*

MILK PRODUCTION CALCULATED BY CALENDAR-MONTH METHOD

Month	Tests made on 5th of month			Tests made on 25th of month		
	Yield on testing day	Testing period, days	Production	Yield on testing day	Testing period, days	Production
	Pounds	*Number*	*Pounds*	*Pounds*	*Number*	*Pounds*
December	......	....	....	30	14	420
January	35	45	1, 575	39	31	1, 209
February	43	28	1, 204	45	28	1, 260
March	42	31	1, 302	41	31	1, 271
April	38	30	1, 140	35	30	1, 050
May	32	31	992	30	31	930
June	28	30	840	25	30	750
July	23	31	713	19	31	589
August	16	31	496	14	31	434
September	12	30	360	10	30	300
October	9	30	270	5	30	150
Total	....	317	8. 892	....	317	8, 363

MILK PRODUCTION CALCULATED BY CENTERING METHOD

December	......	....	....	30	(7+16) 23	690
January	35	(18+16) 34	1, 190	39	31	1, 209
February	43	28	1, 204	45	28	1, 260
March	42	31	1, 302	41	31	1, 271
April	38	30	1, 140	35	30	1, 050
May	32	31	992	30	31	930
June	28	30	840	25	30	750
July	23	31	713	19	31	589
August	16	31	496	14	31	434
September	12	30	360	10	30	300
October	9	(15+26) 41	369	5	(15+6) 21	105
Total	....	317	8, 606	....	317	8, 588

last period. therefore, includes 41 days (15+26 days) of production. The production for the entire lactation period. calculated on the basis of tests made on the 5th of the month. is 8,606 pounds. Exactly the same procedure is followed in calculating the production by the centering method on the basis of tests made on the 25th of the month. This is also shown in table 2. The difference (8,606−8,588) of 18 pounds in total production calculated by the centering method. using tests on the 5th and 25th of the month, is relatively insignificant as compared to a difference of 529 pounds when calculated on the calendar-month method. Figure 16 *C* and *D* show graphically why the centering method has greater accuracy. The plus and minus areas are approximately equal.

To summarize:

(1) The testing day for each herd is the center of the monthly testing period for that herd;

(2) Testing days must be centered if accurate records are to be calculated;

(3) Only the first and last monthly testing periods require special calculation in obtaining an accurate record.

Determining Monthly Testing Period

Table 3 will aid in determining the limits of each monthly testing period as centered for any testing day of the year. It is especially useful in determining the number of days in the first and last testing periods for each cow.

TABLE 3.—*Testing period as centered on each testing day of each month*

Testing day of the calendar month	January, August (31 days)	February (28 days)	February (29 days)	March (31 days) following February (28 days)	March (31 days) following February (29 days)	April, June, September, November (30 days)	May, July, October, December (31 days)
1st	[1] 17 to 16	[1] 17 to 13	[1] 17 to 14	[1] 14 to 16	[1] 15 to 16	[1] 17 to 15	[1] 16 to 16
2d	[1] 18 to 17	[1] 18 to 14	[1] 18 to 15	[1] 15 to 17	[1] 16 to 17	[1] 18 to 16	[1] 17 to 17
3d	[1] 19 to 18	[1] 19 to 15	[1] 19 to 16	[1] 16 to 18	[1] 17 to 18	[1] 19 to 17	[1] 18 to 18
4th	[1] 20 to 19	[1] 20 to 16	[1] 20 to 17	[1] 17 to 19	[1] 18 to 19	[1] 20 to 18	[1] 19 to 19
5th	[1] 21 to 20	[1] 21 to 17	[1] 21 to 18	[1] 18 to 20	[1] 19 to 20	[1] 21 to 19	[1] 20 to 20
6th	[1] 22 to 21	[1] 22 to 18	[1] 22 to 19	[1] 19 to 21	[1] 20 to 21	[1] 22 to 20	[1] 21 to 21
7th	[1] 23 to 22	[1] 23 to 19	[1] 23 to 20	[1] 20 to 22	[1] 21 to 22	[1] 23 to 21	[1] 22 to 22
8th	[1] 24 to 23	[1] 24 to 20	[1] 24 to 21	[1] 21 to 23	[1] 22 to 23	[1] 24 to 22	[1] 23 to 23
9th	[1] 25 to 24	[1] 25 to 21	[1] 25 to 22	[1] 22 to 24	[1] 23 to 24	[1] 25 to 23	[1] 24 to 24
10th	[1] 26 to 25	[1] 26 to 22	[1] 26 to 23	[1] 23 to 25	[1] 24 to 25	[1] 26 to 24	[1] 25 to 25
11th	[1] 27 to 26	[1] 27 to 23	[1] 27 to 24	[1] 24 to 26	[1] 25 to 26	[1] 27 to 25	[1] 26 to 26
12th	[1] 28 to 27	[1] 28 to 24	[1] 28 to 25	[1] 25 to 27	[1] 26 to 27	[1] 28 to 26	[1] 27 to 27
13th	[1] 29 to 28	[1] 29 to 25	[1] 29 to 26	[1] 26 to 28	[1] 27 to 28	[1] 29 to 27	[1] 28 to 28
14th	[1] 30 to 29	[1] 30 to 26	[1] 30 to 27	[1] 27 to 29	[1] 28 to 29	[1] 30 to 28	[1] 29 to 29
15th	[1] 31 to 30	[1] 31 to 27	[1] 31 to 28	[1] 28 to 30	[1] 29 to 30	[1] 31 to 29	[1] 30 to 30
16th	1 to 31	1 to 28	1 to 29	1 to 31	1 to 31	1 to 30	1 to 31
17th	2 to [2] 1	2 to [2] 1	2 to [2] 1	2 to [2] 1	2 to [2] 1	2 to [2] 1	2 to [2] 1
18th	3 to [2] 2	3 to [2] 2	3 to [2] 2	3 to [2] 2	3 to [2] 2	3 to [2] 2	3 to [2] 2
19th	4 to [2] 3	4 to [2] 3	4 to [2] 3	4 to [2] 3	4 to [2] 3	4 to [2] 3	4 to [2] 3
20th	5 to [2] 4	5 to [2] 4	5 to [2] 4	5 to [2] 4	5 to [2] 4	5 to [2] 4	5 to [2] 4
21st	6 to [2] 5	6 to [2] 5	6 to [2] 5	6 to [2] 5	6 to [2] 5	6 to [2] 5	6 to [2] 5
22d	7 to [2] 6	7 to [2] 6	7 to [2] 6	7 to [2] 6	7 to [2] 6	7 to [2] 6	7 to [2] 6
23d	8 to [2] 7	8 to [2] 7	8 to [2] 7	8 to [2] 7	8 to [2] 7	8 to [2] 7	8 to [2] 7
24th	9 to [2] 8	9 to [2] 8	9 to [2] 8	9 to [2] 8	9 to [2] 8	9 to [2] 8	9 to [2] 8
25th	10 to [2] 9	10 to [2] 9	10 to [2] 9	10 to [2] 9	10 to [2] 9	10 to [2] 9	10 to [2] 9
26th	11 to [2] 10	11 to [2] 10	11 to [2] 10	11 to [2] 10	11 to [2] 10	11 to [2] 10	11 to [2] 10
27th	12 to [2] 11	12 to [2] 11	12 to [2] 11	12 to [2] 11	12 to [2] 11	12 to [2] 11	12 to [2] 11
28th	13 to [2] 12	13 to [2] 12	13 to [2] 12	13 to [2] 12	13 to [2] 12	13 to [2] 12	13 to [2] 12
29th	14 to [2] 13	....	14 to [2] 13	14 to [2] 13	14 to [2] 13	14 to [2] 13	14 to [2] 13
30th	15 to [2] 14	....	....	15 to [2] 14	15 to [2] 14	15 to [2] 14	15 to [2] 14
31st	16 to [2] 15	....	....	16 to [2] 15	16 to [2] 15	....	16 to [2] 15

[1] Date of previous month.

[2] Date of following month.

The three following examples will illustrate the use of the table.

(1) If the testing day is April 7, the testing period includes 30 days and extends from March 23 to April 21, inclusive, for all cows in milk during the 30-day period.

(2) In a herd tested January 4, suppose a cow freshened and her milk became good on December 28. The table shows that the testing period for a herd tested January 4 extends from December 20 to January 19, a 31-day period. But the first testing period for this cow would begin December 28, or 8 days later than the testing period for the herd, and therefore include only 23 days.

(3) In a herd tested September 4, suppose a cow ends her lactation period September 15. The table shows that the testing period for a herd tested on September 4 extends from August 20 to September 18, a 30-day period. But since this cow's lactation ended September 15, her last testing period would extend only to September 15, or 3 days less than the testing period for the herd, and therefore include only 27 days.

Changing The Testing Day

If new members come into an association, the tester may have to change his route and also the testing day for some herds; then special calculation of production records for the first new testing period becomes necessary in order that the old and new testing periods may exactly coincide and no part of the herd record will be duplicated or omitted. For example, suppose the testing day for a herd was changed in July from the 11th to the 28th of the month. The testing period for the July 11 testing day runs forward 16 days or to and including July 26. When the herd is tested in August the testing period for the new testing day (August 28) would normally run back 15 days. However, that would take the testing period back only to and including August 13. There would be 5 days in July and 12 days in August not included in the record. Therefore, 17 days should be added to the August testing period, which would then include (31+17) 48 days.

Suppose a testing day is changed late in May from the 21st to the 12th day of the month. The testing period for the May 21 testing day does not change and extends to and includes June 5. The testing period for the new testing day (June 12) would run back 15 days from this testing day and thus overlap the May testing period. Therefore, the testing period for June should run back only to June 5, or 7 days, including the testing day, and forward to June 27, or 15 days, making a total of 22 days for the June testing period.

Starting the Testing Year

In starting the association year for the first time on a herd the tester counts back of the testing day 15 days, not including the testing day. Thus, if the tester visits a farm for the first time on January 12, the testing year for the herd actually begins December 28. If he visits a farm on January 23, the testing year begins January 8, etc.

When a herd has been on test and the centering system has been used, the tester simply uses the same testing period and the same testing day in the new book as he did in the old book. The first testing period in the new book will, therefore, follow the last testing period in the old book.

Credit to Proper Month

When a cow freshens, the testing period for her first test may extend back into the previous testing period. For example (p. 23) a cow freshens December 15. Her milk is good beginning December 18. The tester visits the farm on January 5. The first testing period would include 34 (18+16) days. The January testing period, however, should be credited with 31 days' production and credit for 3 days' production should be given the December testing period.

When a cow goes dry, the testing period for the last test made may extend forward into the following testing period. For example (p. 23) a cow goes dry October 30. The tester visits the farm on October 5. The last testing period includes 41 (15+26) days. The October testing period should be credited with 31 days' production and credit for 10 days' production should be given the November testing period. With proper credit being given to each testing period the herd average for a testing period is not inflated nor deflated as compared to the actual production for the period.

Completing Lactation Record

In calculating the complete lactation record for recording in the herd-record book the tester will not know exactly when the cow will go dry. If monthly herd-average data are not necessary, the tester may simply record the data for the testing day and wait until his next visit to calculate the production. If, however, it is necessary to obtain monthly herd averages, the tester may calculate the record for the last testing period for the number of days he thinks the cow will milk and enter it in the herd-record book in pencil. The record may then be corrected on his next visit.

Calculating 305-Day Records

INASMUCH as the data now used for proving sires are based on 305-day lactation records, some examples are given below for calculating the first and last testing periods for a 305-day lactation record. If a cow's actual lactation period is 305 days or less, the record is calculated for the exact number of days of lactation. If, however, her lactation period exceeds 305 days she is regarded as having ended her lactation period on the three hundred and fifth day. Four examples follow:

(1) A cow freshens January 13. Her milk is good on January 16. Counting forward 305 days, the record ends on November 16. If the cow freshened March 7, the record would end January 8, etc.

(2) A cow freshens April 7 and comes into milk April 10, and the tester visits the farm and makes his tests April 18. The end of the 305-day record would be February 8. The following testing periods are established:

	Days		Days
April	23 (8+15)	October	31
May	31	November	30
June	30	December	31
July	31	January	37 (15+22)
August	31		
September	30	Total	305

(3) A cow freshens December 30 and comes into milk January 2. The tester visits the farm January 10. Although the cow milks longer than 305 days, her 305-day record ends November 2. The following testing periods are established:

	Days		Days
January	24 (8+16)	July	31
February	28	August	31
March	31	September	30
April	30	October	39 (15+24)
May	31		
June	30	Total	305

(4) A cow freshens December 30 and comes into milk January 2. The tester visits the farm January 1. The 305-day record ends November 2. The following testing periods are established:

	Days		Days
February	43 (30+13)	August	31
March	31	September	30
April	30	October	31
May	31	November	17 (15+2)
June	30		
July	31	Total	305

It is suggested that the tester use the above examples as a guide to work out several examples from data in his own books until he is entirely familiar with every detail involved.

Further information on calculating 305-day records is given under Reporting Production Records for Permanent Recording (pp. 32–34).

Bimonthly Testing

The foregoing discussion refers only to monthly testing. On bimonthly tests the centering system should also be used in calculating records. To illustrate how the testing periods are determined on bimonthly tests the data in table 1 will be used. The cow comes into milk December 18 and ends her record on October 30.

(1) If the tester visits the farm on January 5, the following testing periods are established:

	Days		Days
January	49 (18+31)	September	87 (31+56)
March	59 (28+31)		
May	61 (30+31)	Total	317
July	61 (30+31)		

(2) If the tester visits the farm for the first time on February 5, the following testing periods are established:

	Days		Days
February	77 (49+28)	October	56 (30+26)
April	61 (31+30)		
June	61 (31+30)	Total	317
August	62 (31+31)		

(3) If the tester visits the farm for the first time December 25, the following testing periods are established:

	Days		Days
December	38 (7+31)	August	62 (31+31)
February	59 (31+28)	October	36 (30+6)
April	61 (31+30)		
June	61 (31+30)	Total	317

(4) If the tester visits the farm on January 25 as the beginning of the testing year the following testing periods are established:

	Days		Days
January	69 (38+31)	September	67 (31+36)
March	59 (28+31)		
May	61 (30+31)	Total	317
July	61 (30+31)		

The tester should use the foregoing examples as guides to work out several other examples from data in his own books.

In calculating records from bimonthly tests these facts should be remembered: (1) The testing day becomes the centering day. (2) As shown in the examples, the first testing period goes forward as many days as there are days in the month in which the test is made, including the testing day, and back to the day the cow came into milk. (3) The following testing periods, except the last, go back from the centering day as many days as there are in the month previous to the month in which the test is made, but *not* including the testing day, and forward as many days as there are days in the month in which the test is made, including the testing day. (4) The last testing period goes back as many days as there are days in the month previous to the month in which the test is made, but *not* including the testing day, and forward, including the testing day, to the day the cow does dry. (5) In calculating 305-day records the same procedure as outlined above is followed; in calculating the last period the cow is regarded as having ended her lactation on the three hundred and fifth day. (6) In starting the association year for the first time on a herd, the tester counts back from the testing day, but *not* including it, as many days as there are days in the month previous to the month in which the test is made. If he visits a farm for the first time on January 17 the testing year for the herd actually begins 31 days earlier, or December 17. If he visits a farm on March 5 the testing year begins 28 days earlier or February 5, etc. Where a herd has been on bimonthly test and the centering system has been used, the same testing periods and the same testing days are carried forward into the new books.

Recording the Identity and Production Performance of All DHIA Animals

HERD improvement through breeding has become an important part of the dairy herd-improvement association program. A broad progressive breeding program will be possible, however, only when the sire and the dam of each animal in the association herds are known and recorded and the production records of all cows tested are available for study and analysis. With such information readily available, individual animals (both male and female) that have the ability to transmit high milk- and butterfat-producing capacity may be located. Effort may then be made to perpetuate and disseminate their influence throughout the dairy-cow population.

A dairy herd-improvement association breeding program is no longer confined to herds or associations within a State. Family lines of dairy cattle may extend to herds widely scattered in different associations or different States. It is necessary, therefore, to have production records obtained in associations assembled in a central office where all related records may be included in studies or tabulations to indicate the breeding value of an animal or a dairy cattle breeding family.

The Permanent Record System

The Bureau of Dairy Industry has set up a filing system for permanently recording the identification and production records obtained in dairy herd-improvement associations. In routine manner complete information on all animals in association herds is accumulating. The data are so filed and cross-indexed that proved-sire data are obtained on every sire used in *every dairy herd-improvement association herd.* Proved-sire records are tabulated and returned to the States as rapidly as the data become available. Complete production data are accumulating for analyzing the genetic make-up of herds in order to identify the improved lines of breeding.

Establishing Identity

A uniform plan of eartagging all nonregistered animals in dairy herd-improvement association herds, except those already bearing Bang's or TB eartags, has been developed so that the identity of all animals may be recorded permanently in the Bureau's files. Nonregistered animals that have been officially tested for tuberculosis or Bang's disease carry a numbered eartag which provides a satisfactory basis for identification.

Owners of registered stock frequently dislike to have their animals eartagged, but they should be encouraged to eartag their animals in order to have additional proof of identification. Eartags are especially useful in identifying purebred calves before they are registered. If an owner does not wish to eartag his registered animals, the registration numbers will be acceptable for identification.

DHIA eartags used.—A special DHIA eartag is used. The tag has a sealing device which makes removal of the tag very difficult, if it is properly inserted. One side of the tag bears the name of the State and the letters "D. H. I. A." On the other side of the tag is the number. A systematic numbering plan is being followed to avoid duplication of numbers in any State or between States.

State extension dairymen distribute eartags to testers.—The State extension dairyman obtains all DHIA eartags used in his State direct from the eartag manufacturer. The manufacturer supplies each State with eartags, using a numbering plan in each State which is a part of the national numbering plan.

The State extension dairyman distributes the eartags to testers, keeping a complete record of the identification numbers of all tags distributed to each tester.

The cost of the eartag is small. In most cases the association member pays for the tags used in his herd.

Animals to be eartagged.—The tester should encourage every association member interested in improving the breeding of his dairy herd to have his cattle eartagged and their identification numbers recorded. If a member is not interested in a breeding program for his dairy herd, it is practically useless for the tester to spend the time to eartag animals in such herds and report their identification numbers. However, no herd should be excluded from the identification program by the tester without specific authorization from the State extention dairyman.

All animals to be identified in those herds that are not registered or do not have a TB or Bang's eartag shall be given a DHIA eartag. Animals having only private herd eartags shall be given DHIA eartags.

Once all the animals of a herd are eartagged or registered and their identification numbers have been reported, only the young stock and purchased replacements will need to be eartagged and reported to keep the entire herd identified.

All calves should be eartagged as soon as possible after they are born. Each time the tester visits a farm he should eartag all young stock and all replacements not registered or eartagged that entered the herd since his last visit.

The tester inserts the eartags.—He will be held responsible for all eartags allotted to him. He should keep his supply in a locked box. The box should be free from moisture and acid to prevent rusting or corrosion of tags. Only a small supply of tags should be carried. This will further insure that the tags are in first-class condition when they are inserted. The tester is responsible for eartagging all association animals, and must account for every tag in the identification record. *He personally must insert all tags.* Only animals in association herds will be given DHIA eartags.

Inserting an eartag (fig. 17) is a simple process but it should be done methodically and with great care. The tester should take the necessary time to insert the tags properly and securely. A special punch is used to insert the tag. This punch causes the prong of the tag to pierce the ear and expand within the sealing button, in one operation.

The animal must be restrained or tied so that it cannot move its head. It is not enough simply to have the animal in a stanchion. If the animal is able to move its head, even slightly, the prong may be bent or the tag shifted in the punch so that it will not seal properly. *After the ear has been pierced strong pressure must be applied to the punch to insure that the tag is securely clinched and sealed.* If these precautions are taken, few tags will be lost.

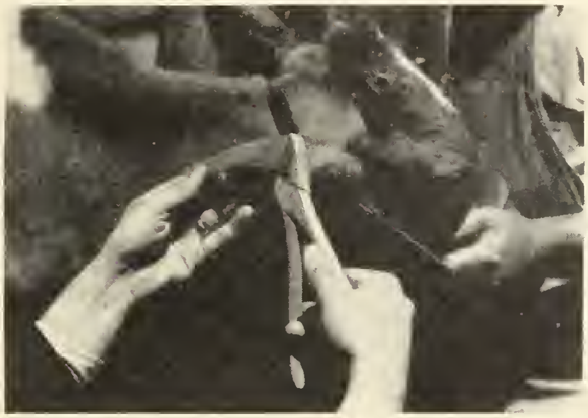


FIGURE 17.—*Each unidentified animal in the herd should receive a DHIA eartag.*

The eartag must be properly seated in the jaws of the punch so that it is held securely. The button side of the tag, bearing the name of the State and the letters "DHIA", must lie flat and snug in the grooves on the jaw of the punch. In this position the pronged side of the tag, bearing the serial number, *will not* lie flat against the other jaw of the punch. If seated in this manner the tag is held securely and will not move sideways in the punch.

The tag is placed in the *top* of the *right* ear with the *numbered side of the tag on the outside of the ear.* In that position the tag is secure and may be easily read. Care should be taken to avoid placing the tag in the curvature near the base of the ear, as this may result in irritation and possible loss of the tag. The tag should be so placed in the ear of a mature animal that the curved end of the tag will be flush with the edge of the ear. On young stock the tag is so placed as to allow approximately one-fourth inch for growth of the ear.

Lost tags.—If the eartags are properly inserted, very few will be lost. But if an animal does lose an eartag, the tester should insert a new one during his next visit and report both the number of the lost eartag and the number of the new eartag on form BDI–717, as shown in figure 12 (p. 16).

Reporting Identification Records for Permanent Recording

The most important part of the program of eartagging animals for identification purposes is making the record of that identification. If the record is not made, eartagging is of little value. The identification record of each animal in a dairy herd-improvement association must be reported promptly on Form BDI–717, permanent DHIA Identification Record Report (fig. 12). Black ink must be used in filling out this report.

All animals, both *registered* and *nonregistered*, are included in the identification report. If a registered animal has an eartag, both the eartag number and the registration number are reported. When an animal has been imported and has a foreign registration or eartag number, the name of the country is given with the number. The sire and dam of each animal listed are reported in the same way, if they can be identified. If the sire or dam, or both, are not positively known by the tester and herd owner, the words "not known" are written in the appropriate columns. The tester can obtain complete information, of course, on all registered animals from the registration papers.

If TB or Bang's disease eartag numbers are used to report an individual, or the dam and sire of an individual, the name of the State is included with the prefix and number, as "Tex–A59276." Testers shall examine Bang's and TB eartags to see the name of the State. These tags may be from a State other than the one in which the animal is located. This precaution is necessary because there is duplication of TB and Bang's eartag numbers between States. It is not necessary to name the State with DHIA eartag numbers as there will be no duplication of DHIA eartag numbers. The DHIA eartag numbers must be given in full, including the State code number and letter prefix as "74–A1560."

The breed and sex of each animal listed are included in the report. All animals not registered shall be considered as grades. Write R. H., R. G., R. J., R. A., R. BS., etc., or G. H., G. G., G. J., G. A., G. BS., etc. The name and address of the owner is reported also.

Complete birth dates are to be reported.—The exact birth date of an animal is given in all known cases. If the exact date of birth is not known, the *month* and *year* or the *season* and *year* will suffice.

If only the year of a cow's birth can be obtained, her identification record may be reported but her production records will not be used in tabulating proved-sire records. Such records will be permanently recorded, however, and used in tabulations for analyzing the herd. This will enable owners of herds on which few records have been kept to include the cows of their present herd as foundation animals in any genetic analysis that may be made of the herd in the future.

When the identification report is complete, it is sent promptly to the State extension dairyman who in turn will forward it to the Bureau of Dairy Industry, Washington, D. C., for permanent recording. The identification report must be *approved and certified as to accuracy by the State extension dairyman* before the data will be placed in the permanent files of the Bureau.

On each visit the tester identifies and reports all young stock and replacements that have entered the herd since his previous visit.

Reporting Production Records for Permanent Recording

After all animals in an association have been identified and their identification records have been reported on form BDI–717, the tester is ready to report production records on form BDI–718 for permanent recording. The production records to be reported for permanent recording are 305-day lactation records. The tester reports the production record of every cow on test as she ends the first 305 days of her lactation period.

In determining the monthly yields the tester must use the centering system (pp. 23–27). Instructions for calculating the production for the first 305 days of the lactation period are given on page 28.

The tester insures that all production records will be reported promptly by noting on each individual-cow record in the herd-record book the date when each cow will end the first 305 days of her lactation period, to remind him when her production record should be reported. Table 4 will aid him in calculating the date the 305-day production record will end for different freshening dates.

Table 4.—*Date the 305-day lactation period ends for each freshening date*

Freshening date	End of 305-day period	Freshening date	End of 305-day period	Freshening date	End of 305-day period	Freshening date	End of 305-day period	Freshening date	End of 305-day period	Freshening date	End of 305-day period
Jan. 1	Nov. 4	Mar. 1	Jan. 2	May 1	Mar. 4	July 1	May 4	Sept. 1	July 5	Nov. 1	Sept. 4
2	5	2	3	2	5	2	5	2	6	2	5
3	6	3	4	3	6	3	6	3	7	3	6
4	7	4	5	4	7	4	7	4	8	4	7
5	8	5	6	5	8	5	8	5	9	5	8
6	9	6	7	6	9	6	9	6	10	6	9
7	10	7	8	7	10	7	10	7	11	7	10
8	11	8	9	8	11	8	11	8	12	8	11
9	12	9	10	9	12	9	12	9	13	9	12
10	13	10	11	10	13	10	13	10	14	10	13
11	14	11	12	11	14	11	14	11	15	11	14
12	15	12	13	12	15	12	15	12	16	12	15
13	16	13	14	13	16	13	16	13	17	13	16
14	17	14	15	14	17	14	17	14	18	14	17
15	18	15	16	15	18	15	18	15	19	15	18
16	19	16	17	16	19	16	19	16	20	16	19
17	20	17	18	17	20	17	20	17	21	17	20
18	21	18	19	18	21	18	21	18	22	18	21
19	22	19	20	19	22	19	22	19	23	19	22
20	23	20	21	20	23	20	23	20	24	20	23
21	24	21	22	21	24	21	24	21	25	21	24
22	25	22	23	22	25	22	25	22	26	22	25
23	26	23	24	23	26	23	26	23	27	23	26
24	27	24	25	24	27	24	27	24	28	24	27
25	28	25	26	25	28	25	28	25	29	25	28
26	29	26	27	26	29	26	29	26	30	26	29
27	30	27	28	27	30	27	30	27	31	27	30
28	Dec. 1	28	29	28	31	28	31	28	Aug. 1	28	Oct. 1
29	2	29	30	29	Apr. 1	29	June 1	29	2	29	2
30	3	30	31	30	2	30	2	30	3	30	3
31	4	31	Feb. 1	31	3	31	3	Oct. 1	4	Dec. 1	4
Feb. 1	5	Apr. 1	2	June 1	4	Aug. 1	4	2	5	2	5
2	6	2	3	2	5	2	5	3	6	3	6
3	7	3	4	3	6	3	6	4	7	4	7
4	8	4	5	4	7	4	7	5	8	5	8
5	9	5	6	5	8	5	8	6	9	6	9
6	10	6	7	6	9	6	9	7	10	7	10
7	11	7	8	7	10	7	10	8	11	8	11
8	12	8	9	8	11	8	11	9	12	9	12
9	13	9	10	9	12	9	12	10	13	10	13
10	14	10	11	10	13	10	13	11	14	11	14
11	15	11	12	11	14	11	14	12	15	12	15
12	16	12	13	12	15	12	15	13	16	13	16
13	17	13	14	13	16	13	16	14	17	14	17
14	18	14	15	14	17	14	17	15	18	15	18
15	19	15	16	15	18	15	18	16	19	16	19
16	20	16	17	16	19	16	19	17	20	17	20
17	21	17	18	17	20	17	20	18	21	18	21
18	22	18	19	18	21	18	21	19	22	19	22
19	23	19	20	19	22	19	22	20	23	20	23
20	24	20	21	20	23	20	23	21	24	21	24
21	25	21	22	21	24	21	24	22	25	22	25
22	26	22	23	22	25	22	25	23	26	23	26
23	27	23	24	23	26	23	26	24	27	24	27
24	28	24	25	24	27	24	27	25	28	25	28
25	29	25	26	25	28	25	28	26	29	26	29
26	30	26	27	26	29	26	29	27	30	27	30
27	31	27	28	27	30	27	30	28	31	28	31
28	Jan. 1	28	Mar. 1	28	May 1	28	July 1	29	Sept. 1	29	Nov. 1
		29	2	29	2	29	2	30	2	30	2
		30	3	30	3	30	3	31	3	31	3
						31	4				

As previously stated, in case a cow aborts while dry, her record shall be figured the same as a fresh cow. If she aborts while in milk after 200 days following last freshening, her current record shall end and a new lactation record shall begin.

Permanent production-record report.—After the 305-day record has been calculated it is reported on BDI–718 as shown in figure 13. The actual record is reported, not the mature-equivalent record. One line of form BDI–718 should be used for each cow. The report includes the name and address of the owner of the cow; the cow's eartag or registration number (both should be given if available), her breed and date of birth; the eartag or registration number of the cow's sire and dam; the date of calving for the lactation reported, the days in milk (305 days or less), and the number of days during the 305 days or less that the cow was milked three or four times a day; and the cow's production record for the first 305 days of her lactation period. In the column headed "Remarks" the tester may write any special comments concerning the record. If a record is affected by abortion, the approximate date of the abortion should be given as shown in figure 13.

Black ink must be used in filling out this report, as it is photographed in the Washington office to obtain a permanent record of the original data.

A note shall be made in the herd-record book giving the date the production record for each animal was reported on BDI–718. This will prevent records being reported twice as well as insure that all records are reported.

Short-period records reported.—Very often a cow will not milk 305 days. In such cases the record should be reported for the actual number of days the cow was in milk. Such records should be marked "complete."

If a cow dies or is sold before she completes a 305-day lactation record, the tester should report her production up to the time she died or was sold, along with the actual number of days she was milked, regardless of the length of the record. If the cow is sold into another tested herd, the next tester will report the production for the remainder of her lactation period.

Back records may be reported.—Many testers may wish to report back records for some cows in the tested herds in order that all available records may be permanently recorded. Back records may be reported for those cows that are positively identified. If the tester cannot satisfactorily identify a cow and her corresponding production record, *no back record should be reported.*

Approximately two records reported each day.—In reporting current lactation records the tester will usually not have more than two records to report each day as on the average not more than two cows will have ended a 305-day record since his visit at the farm the month before. The tester takes the form BDI–718 from farm to farm until he has it filled. As soon as the form is filled with records it is mailed to the State dairy specialist.

In no case should the tester keep the form more than 1 month after the first record is recorded. *The State extension dairyman must approve and certify* as to the accuracy of the report of the tester before the data will be placed in the permanent files of the Bureau.

Data Must Be Accurate and Complete

To summarize:

(1) The tester must eartag all animals in the association herds that are not registered or eartagged, with special DHIA eartags and must continue to eartag all replacements and young stock as they enter the herd. Exception to this rule for any animal must have the specific authorization of the State extension dairyman.

(2) A complete report of the identification of all animals, both registered and grade, in association herds must be made on form BDI–717.

(3) The production records of each cow as she ends the first 305 days of each lactation period must be reported on form BDI–718.

(4) Black ink shall be used in reporting data on BDI–717 and BDI–718.

(5) The tester must exercise every precaution to insure that the data he reports on BDI–717 and BDI–718 are accurate.

(6) Identification numbers (registration or eartag) must be carefully copied and checked to avoid the transposition or omission of digits.

(7) Birth dates and freshening dates reported must be checked with the original data in the herd-record book to avoid discrepancies.

(8) Production records must be accurately calculated and correctly reported.

(9) A note should be made in the herd-record book giving the date the identification record of each animal was reported on BDI–717 and the date the production record of each animal was reported on BDI–718. These notes will prevent records being reported twice, as well as insure that all records are reported.

(10) If, however, a discrepancy is noted, report the correct data and mark it "corrected" from data previously reported.

(11) Use only one name to designate a farm or herd from which data are reported. If a dairy has more than one farm, or a manager, or a special name for the farm, select and use only one name for each herd.

(12) The State dairy specialist must approve and certify as to the accuracy of all reports made by the tester before the data are placed in the permanent files of the Bureau.

(13) All reports must be mailed promptly.

(14) The data are studied and analyzed to indicate the breeding value of individual animals and lines of breeding of dairy cattle. Proved-sire records are tabulated and herd analysis data are compiled. The studies and tabulations can be no more accurate than the original data. *The original data must be without error.*

Making DHIA Information Public

LOCAL publicity is valuable to association work in the community. The tester should cooperate with the county agent and the local newspapers in preparing news articles. Stories that illustrate a recommended practice should be used in preference to mere statistical accounts. Remember that the real purpose of the testing work is to improve each individual herd. Stories of outstanding sires proved in the association are of interest to all dairymen in the community. Herds in which unusual improvement has been made through association work are also good material for news stories.

Stories featuring merely the high-record cows and the high-record herds frequently fail to benefit the work of the association, as such publicity may encourage "race horse" practices among members.

If monthly herd averages are published, it should be borne in mind that, although monthly averages may be worked out for each herd with a fair degree of accuracy, the data cannot be corrected so as to be absolutely comparable between herds. It is impossible to outline a method of determining monthly herd averages that will give data reliable for comparing herds within the association. Centering the testing day increases the accuracy of the individual-cow record but does not improve the data for the purpose of herd comparisons. If the testing day is not centered, the herd tested early in the month usually has the advantage over the herd tested later in the month. If the testing day is properly centered, each herd having a different testing day has actually a different monthly testing period, because the testing day is always the middle day of the testing period.

In publishing herd averages it is sometimes advisable to list institutional herds separately. Often individual dairymen dislike to have their herds compared with herds owned by institutions. Also owners of large herds dislike to have their herds compared with smaller herds, since it is often more difficult to make a good average with a large herd than with a small one.

In listing monthly and yearly herd averages, it may be advisable to classify the herds as small herds (below 15 cows), medium herds (15 to 30 cows), and large herds (above 30 cows).

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* * *

This publication is a contribution from

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Ten Points for Cow Testers

1. On the first trip make it a point to get acquainted. Favorable first impressions go a long way toward obtaining the cooperation that will help to make your services most useful. Do not talk too much. Be a good listener. Be helpful, but do not put yourself forward.

2. Help; don't hinder. Do not hesitate to carry in an armful of wood or a bucket of water.

3. Spend the evening with the farmer and his family if it is convenient for them to have you do so. You can learn much from them and they may learn something from you.

4. Be pleasant and agreeable, but do not carry gossip.

5. Mix praise with helpful criticism in such a way that the farmer will gladly follow your advice. The best way is to lead up to an idea in such a manner that the farmer himself will be the first to mention the need and method of the improvement.

6. Keep yourself well informed on the new phases of your work. Constantly new facts are being found and new methods are being developed for conducting a dairy herd-improvement program. You should have the latest information at all times.

7. So far as possible, complete the records and bring them up to date at each visit. If possible, fill out all records.

8. Promote cooperation among your farmers, but do not make yourself conspicuous. Be "the power behind the throne," but do not try to sit on the throne.

9. Publish favorable results and give each owner and each herd as much publicity as the facts will warrant.

10. Dairy herd-improvement association work is an agricultural extension project. It is a part of the local county agent's extension program. The county agent can help you and you can be of assistance to him. If at all possible visit his office and talk over your work with him at least once a month.